

July 2020

Los Alamos Conservation Plan for Cultivation Activities

SANTA BARBARA COUNTY, CALIFORNIA

PREPARED BY:

U.S FISH AND WILDLIFE SERVICE
VENTURA FISH AND WILDLIFE OFFICE
2493 PORTOLA ROAD, SUITE B
VENTURA, CALIFORNIA 93101

Los Alamos Conservation Plan Authorization

This Los Alamos Conservation Plan for Cultivation Activities associated with issuance of Endangered Species Act section 10(a)(1)(B) permits for the Santa Barbara County distinct population segment of the California tiger salamander in Santa Barbara County, California is approved and is in effect as of the date below.

Authorization:

Stephen P. Henry
Field Supervisor
Ventura Fish and Wildlife Office

Table of Contents

Cover Sheet	4
Section 1. Introduction	5
Purpose and Need.....	5
Planning Area.....	6
Permittees	7
Plan and Permit Duration	7
Regulatory Context	7
Regulatory Framework.....	7
Covered Species	12
Alternatives to the Taking.....	13
Section 2. Covered Activities	14
Crop Production Areas	14
Greenhouses, Hoop Structures, and Shade Structures	14
Roads and Bridges.....	15
Water Storage Reservoir, Water Wells, Frost Protection Ponds, and Irrigation.....	15
Barn, Offices, Winery Facility, Tasting Room, Single-family Home, Parking Lots, and Other Ancillary Facilities	16
Construction of Other Ancillary Features	16
Operation and Maintenance of Projects and Facilities.....	16
Onsite Mitigation Areas and/or Off-site Mitigation Banks.....	17
Habitat Restoration Activities	17
Section 3. Environmental Setting and Covered Species	18
Climate	18
Topography/Geology	18
Hydrology/Streams, Rivers, Drainages.....	19
Existing and Surrounding Land Uses.....	19
Covered Species	19
California Tiger Salamander Species Information.....	19
Section 4. Biological Impacts and Take Assessment	27

Anticipated Effects on the California Tiger Salamander27

Use of Impacts to Habitat as a Proxy for Take29

Calculating Impacts to California Tiger Salamanders29

Impacts Analysis and Estimated Incidental Take30

Section 5. Conservation Program/Measures to Minimize and Mitigate for Impacts33

 Biological Goals and Objectives33

 Compensatory Mitigation for the California Tiger Salamander34

 Avoidance, Minimization, and Mitigation Measures35

 Measures to Avoid and Minimize Impacts.....35

 Measures to Mitigate Unavoidable Impacts39

 Monitoring.....43

 Adaptive Management Strategy44

 Changed Circumstances47

 Unforeseen Circumstances52

 Reporting.....53

Section 6. Funding.....54

Section 7. Permit Processing and Implementation55

 Permit Application Package55

 Service Review and Notification of Permit Application Package Approval or Denial57

 Permit Application Submission.....58

 Permit Implementation58

 Impact, Mitigation, and Post-Construction Restoration Tracking59

 Reporting.....60

 Permit Amendments61

 Permit Renewal63

 Permit Transfer.....63

 Such Other Measures that the Service May Require.....63

Section 8. References65

Figures

Figure 1. Planning Area7

Figure 2. California Tiger Salamander Habitat in the Planning Area26

COVER SHEET

TITLE: Los Alamos Conservation Plan for Cultivation Activities in Santa Barbara County

PERMIT(S): See individual Applicants / Projects

SPECIES: Santa Barbara County Distinct Population Segment (DPS) of the California tiger salamander (*Ambystoma californiense*)

PLANNING AREA: The Los Alamos Conservation Plan Planning Area is shown in Figure 1. The area encompasses the East and West Los Alamos Metapopulation Areas of the Santa Barbara County DPS of the California tiger salamander.

COVERED ACTIVITIES: The Los Alamos Conservation Plan covers activities associated with the installation and operation of vineyards, crops, and other agricultural development involving land-clearing ripping, plowing and other soil cultivation techniques.

COOPERATORS: U.S. Fish and Wildlife Service and private landowners engaged in activities covered under this plan.

TAKE: The U.S. Fish and Wildlife Service will use the following means to estimate the amount of take that is likely to occur to each of the species covered in the permit:

California tiger salamander: The U.S. Fish and Wildlife Service is using number of acres of California tiger salamander habitat disturbed as a surrogate for the number of individuals to estimate the amount of take that is likely to occur (Section 4). Disturbance of California tiger salamander habitat may occur within the Planning Area. These impacts may occur in the form of permanent and temporary habitat impacts resulting from installation and operation of vineyards, crops, agricultural development, and other covered activities. Additionally, habitat may be affected during operations and maintenance during the life of the permit. We expect some level of effects to any California tiger salamanders located within the disturbed areas.

FUNDING PLAN: Applicants commit to full implementation of the Los Alamos Conservation Plan. Applicants will minimize and mitigate for all unavoidable impacts according to the mitigation strategy for the California tiger salamander and the anticipated impacts described in their Individual Project Package application (Section 7). Funding assurances will be provided with their Individual Project Package application.

MONITORING PLAN: An annual report is due from each applicant on March 31 each year that the Permit is in effect.

DURATION OF PERMITS ISSUED UNDER THE PLAN: 20 years for construction, operations, maintenance, and decommissioning activities.

Section 1 Introduction

Purpose and Need

The U.S. Fish and Wildlife Service (Service) developed the Los Alamos Conservation Plan (Plan) to provide an efficient and effective permitting mechanism for private landowners engaged in horticulture activities to meet statutory and regulatory requirements while promoting conservation of California tiger salamander (*Ambystoma californiense*). The Endangered Species Act (Act) of 1973, as amended, and its implementing regulations, prohibits “take” of wildlife species listed as threatened or endangered. The term “take” means to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct” (16 USC § 1532(3)(19)). However, pursuant to the Principal Deputy Director’s Memorandum: Guidance on When to Seek an Incidental Take Permit (Service 2018), harassment is not a form of take permitted under section 10(a)(1)(B) since it is not incidental take but an intentional or negligent act.

This Plan is a conservation plan as required in Section 10(a)(2)(A) of the Act for issuance of an incidental take permit pursuant to section 10(a)(1)(B) (Permit). Specifically, this plan was developed in accordance with the Service’s Final General Conservation Plan Policy (Service 2007). This approach allows the Service to develop a 10(a)(1)(B) conservation plan suitable for the needs of a local area, then complete all NEPA requirements for 10(a)(1)(B) incidental take permit issuance, and then issue individual permits to landowners who wish to apply for an incidental take permit and demonstrate compliance with the terms and conditions of the plan. Participation in the Plan and an application for take authorization is voluntary. To be permitted to take listed wildlife species through this streamlined process, applicants must:

- Meet the issuance criteria found at 50 CFR 13 and 17;
- Document that their projects meet various qualifying criteria (described below);
- Agree to implement the avoidance, minimization, and mitigation actions described in this document and comply with the terms and conditions of any Permit(s) issued under this Plan; and
- Provide documentation that they have met the minimization and mitigation requirements for their project as described in this document.

Following Plan approval, applicants must submit an Individual Project Package for Service approval. If approved, the Service will issue an individual Permit prior to the initiation of impacts occurring in California tiger salamander habitat. The requirements for Individual Project Package approval are described in Section 7 of this Plan.

The Service recognizes that actions associated with the installation and operation of vineyards, crops, and other agricultural development involving land-clearing ripping, plowing and other soil cultivation techniques may result in take of the endangered California tiger salamander. California tiger salamanders could be taken through crushing or getting struck by equipment or vehicles, and through impacts to habitat for the species. Section 4 discusses the use of impacts to habitat as a proxy for take of the California tiger salamander. This Plan describes a range of projects for which avoidance actions alone are not sufficient to prevent take of the California tiger salamander, and describes actions that can serve to minimize and mitigate the impacts of such taking to the maximum extent practicable.

This Plan is focused on horticulture within the East and West Los Alamos Metapopulation Areas for the California tiger salamander in Santa Barbara County, California. Project proponents engaged in actions described as “Covered Activities” in this document may participate through the Plan. This document specifies the type of incidental take anticipated to occur over the duration of the Plan, minimization and mitigation requirements, and all other measures necessary to meet permit issuance criteria described in Section 10(a)(2)(B) of the Act. Project proponents that choose to participate in the Plan and meet issuance criteria would subsequently be granted a permit through the Plan. The Service will issue Permits in an expeditious manner.

We developed this document in cooperation with the local landowners in an effort to best meet the current and anticipated needs of the industry and the Service’s statutory and regulatory requirements. Despite the best efforts of all stakeholders involved, some projects may result in take that was not foreseen during the development of this Plan, or affect candidate or listed species not covered by the Plan. If Covered Activities may result in take of non-covered, federally-listed species, we recommend those project proponents apply for a permit from the Service for the non-covered species. A permit may be suspended or revoked for noncompliance with permit conditions or with any applicable laws or regulations governing the conduct of the permitted activity (50 CFR 13.27, 13.28); revocation can further disqualify an applicant from receiving or exercising the privileges of a similar permit for a period of five years from date of agency decision on the revocation (50 CFR 13.21(c)(2)).

Planning Area

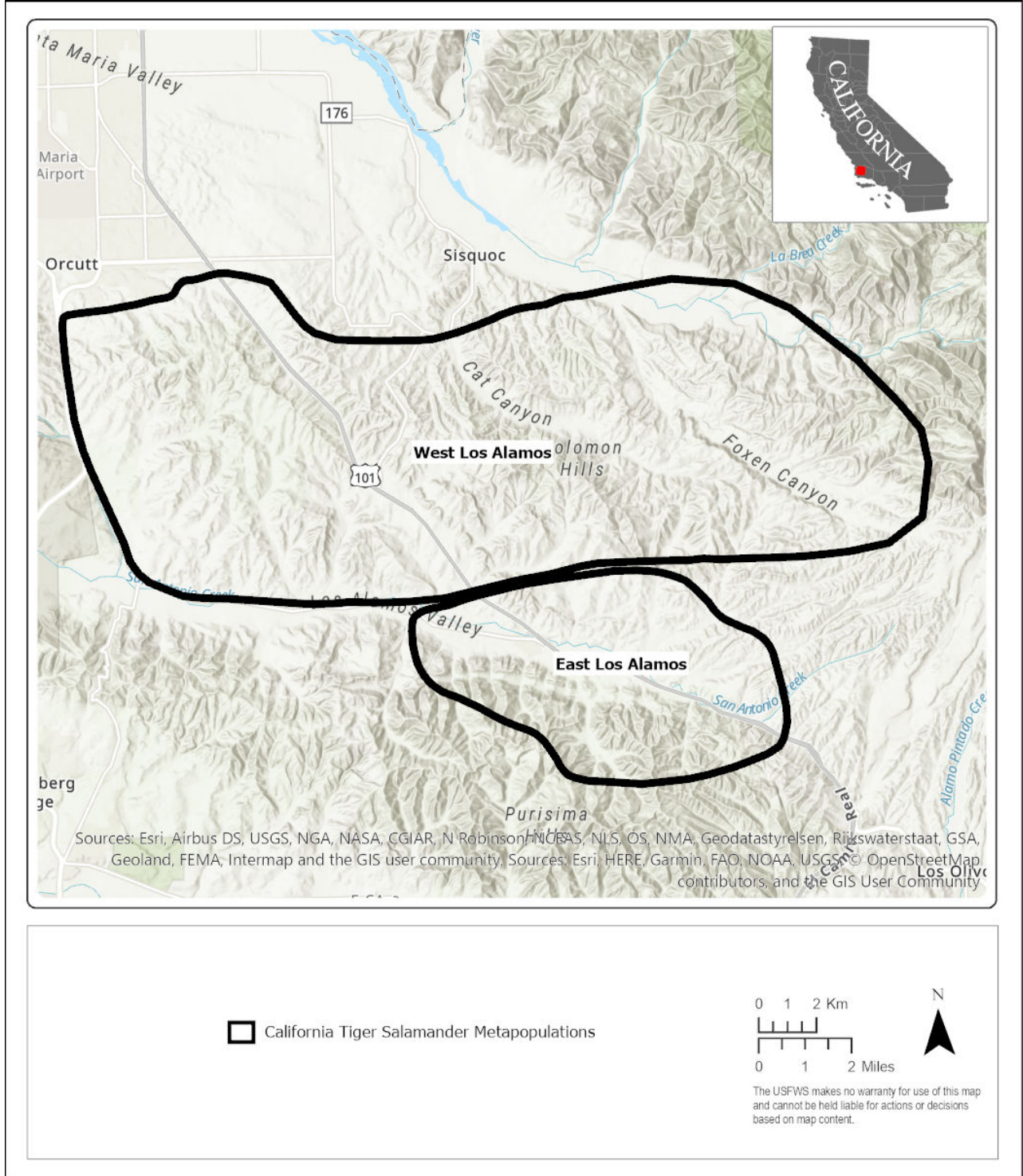
The Planning Area generally consists of the East and West Los Alamos Metapopulation Areas for the Santa Barbara County DPS of the California tiger salamander. The Planning Area expands beyond the eastern boundary of the West Los Alamos Metapopulation Area by an additional 4,971 acres to encompass 8 pond features that have potential suitable breeding habitat for the California tiger salamander. The entire Planning Area is approximately 82,272 acres (Figure 1).

Land within the Planning Area includes undeveloped land, agricultural lands, and rural and urban development. The Planning Area encompasses diverse habitats, resources, and degrees of development. The Covered Activities would not affect all lands within the Planning Area.

Throughout this document the terms Planning Area, Project Area and impact area are used. The Planning Area is defined as the total 82,272-acre area covered by this plan. The Project Area

refers to the area covered by an individual project seeking an incidental take permit under this plan. The impact area refers to the habitat that could be impacted by project activities within an individual Project Area.

Figure 1. Conservation Plan Planning Area



Permittees

Project proponents planning to engage in Covered Activities (as identified in Section 2) within the Planning Area may be eligible for a Permit, if specific conservation measures identified in the Plan are being or will be implemented. Those measures include minimization and mitigation measures for the California tiger salamander (Section 5). Following issuance of a Permit, these project proponents are referred to as Permittees.

Plan and Permit Duration

The Service will approve this Plan once it: (1) publishes a notice of availability of a draft National Environmental Policy Act (NEPA) document and draft Plan in the Federal Register; (2) accepts and addresses public comments; (3) makes a decision under NEPA; (4) completes an internal consultation under section 7(a)(2) of the Act; and (4) signs the Plan. Incidental take permits issued under the Plan will authorize incidental take associated with covered activities for up to 20 years after issuance of each permit.

Regulatory Context

Permits issued under this Plan cover only take incidental to, and not the purpose of, the carrying out of an otherwise lawful activity (50 CFR 17.3). Project proponents seeking a Permit under this Plan, therefore, must comply with all applicable Federal, State, and local statutes and regulations to ensure that the action is otherwise lawful.

Permittees under this Plan will work with the Service to assist in fulfilling the requirement of Section 106 of the National Historic Preservation Act, 16 USC 470f, and its implementing regulations at 36 CFR part 800.

Regulatory Framework

Federal Endangered Species Act

Section 9 of the Act and its implementing regulations in effect at the time the covered species was listed prohibit the take of any federally listed endangered or threatened animal species. Take is defined in Section 3(19) of the Act as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” The Service regulations at 50 CFR 17.3 further define harm as “an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns such as breeding, feeding or sheltering.” Please note pursuant to a Principal Deputy Director’s Memorandum: Guidance on When to Seek an Incidental Take Permit (Service 2018), harassment is not a form of take permitted under section 10(a)(1)(B) since it is not incidental take but an intentional or negligent act. The Act provides for civil and criminal penalties for the unlawful taking of listed species.

Exemptions to the prohibitions against take may be obtained through coordination with the Service in two ways. If a project is to be funded, authorized, or carried out by a Federal agency and may affect a listed species, the Federal agency must consult with the Service pursuant to

section 7(a)(2) of the Act. Private individuals and State and local or other entities who propose an action that is reasonably certain to result in the take of federally listed fish or wildlife species, and for which no Federal nexus exists, may comply with the Act by applying for, and receiving, an incidental take permit pursuant to section 10(a)(1)(B) of the Act. The application for an incidental take permit must be accompanied by a conservation plan.

Section 7(a)(2) of the Act requires that Federal agencies ensure that their actions, including permit issuance, are not likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Pursuant to 50 CFR 402.2, “Jeopardize the continued existence of...” means to engage in an action that would reasonably be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species. Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features. Issuance of an incidental take permit by the Service, pursuant to section 10(a)(1)(B), constitutes a Federal action that is subject to the requirements of section 7(a)(2), and the Service must prepare an internal consultation to address the effects of the permit issuance.

National Environmental Policy Act

The purpose of the National Environmental Policy Act (NEPA) is two-fold: (1) to ensure that Federal agencies examine environmental impacts of their actions (in this case, the federal action is deciding whether to issue an incidental take permit) and (2) to ensure public participation. The NEPA serves as an analytical tool to address direct, indirect, and cumulative impacts of the proposed project alternatives to help the Service decide whether to issue an incidental take permit. Compliance with the NEPA is required of the Service for each Habitat Conservation Plan (HCP) as part of the incidental take permit application process. The Service will consider the following factors when deciding upon the appropriate NEPA compliance to complete for this plan:

- The effects of this Plan have minor or negligible effects on the federally listed Santa Barbara County DPS of the California tiger salamander;
- The effects of this Plan also have minor or negligible effects on all other components of the human environment, including environmental values and environmental resources (e.g. air quality, geology and soils, water quality and quantity, socio-economic, cultural resources, recreation, visual resources, environmental justice, etc.), after implementation of the minimization and mitigation measures;
- The incremental impacts of this Plan, considered together with the impacts of other past, present, and reasonably foreseeable future actions would not result, over time, in a significant cumulative effects to the human environment; and
- None of the exceptions to categorical exclusions (extraordinary circumstances) listed in 43 CFR 46.215 apply to this Plan.

The effects of this Plan have minor or negligible effects on the federally listed Santa Barbara County DPS of the California tiger salamander. Incidental take permits issued under the Plan

would only be issued for projects resulting in impacts to California tiger salamander upland habitat; no breeding habitat would be impacted as a result of projects pursuing incidental take permits under the Plan. Furthermore, applicants seeking take coverage under the Plan would minimize and mitigate to the maximum extent practicable. The Plan includes avoidance and minimization measures, which would reduce impacts to individual California tiger salamander. Applicants would also propose mitigation that not only meets the Service's permit issuance criteria to minimize and mitigate the impacts of the taking, to the maximum extent practicable, support and further recovery of the Santa Barbara County DPS of the California tiger salamander.

The effects of this Plan also have minor or negligible effects on all other components of the human environment, including environmental values and environmental resources (e.g. air quality, geology and soils, water quality and quantity, socio-economic, cultural resources, recreation, visual resources, environmental justice, etc.), after implementation of the minimization and mitigation measures and the incremental impacts of this Plan, considered together with the impacts of other past, present, and reasonably foreseeable future actions would not result, over time, in a significant cumulative effects to the human environment. Even though the Plan planning area spans 82,272 acres, impacts to or loss of 4,956 would be permitted under the Plan (see Section 4). The covered activities are consistent with the dominant allowable land uses in the area, which are field crops, vineyard, and grazing. Because the covered activities are consistent with historic and current land uses in the area and these ongoing and historic land uses have minor or negligible effects on all other components of the human environment to date, including environmental values and environmental resources, we anticipate effects from similar, continued land uses would have similar effects.

The development of agricultural structures are included as a covered activity in the Plan (see Section 2). Agricultural structures are directly accessory, ancillary and secondary to the agricultural use of the property. These features are generally small and of insignificant size relative to the agricultural, vineyard, or grazing activities occurring on the property. These structures are subject to environmental review under the California Environmental Quality Act (CEQA), which would include assessment of the project's potential impacts to the human environment.

A public agency must comply with CEQA when it undertakes an activity defined by CEQA as a "project." A project is an activity undertaken by a public agency or a private activity, which must receive some discretionary approval from a government agency that may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment. In Santa Barbara County, such "projects" include the construction of agricultural structures, water wells, tasting rooms, etc. Development of these structures and features are included as covered activities in the Plan and would require environmental review under CEQA.

CEQA requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. At a minimum, CEQA requires review of the project and its environmental effects. CEQA requires the lead agency to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental

resource, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. The Service anticipates situations where less-than significant impacts under CEQA would result in significant impact under NEPA are very unlikely. If a situation arises where significant effects occur under CEQA, the Service would ensure that this NEPA document is adequate for that specific project and, if not, additional NEPA review would be required.

National Historic Preservation Act

Federal agencies are required to examine the cultural impacts of their actions. This process requires consultation with the State Historic Preservation Office and appropriate American Indian tribes. The Service will request that all applicants for incidental take permits submit a request for cultural resources compliance form for each project for which they are requesting take coverage. The cultural resources compliance form is attached to this conservation plan and is also located at <https://www.fws.gov/uploadedFiles/Appendix%20D.pdf>.

Other Relevant Laws and Regulations

- *California Endangered Species Act*: The California Endangered Species Act (CESA) generally parallels the main provisions of the Act and provides for the designation of native species or subspecies of plants, fish, and wildlife as endangered or threatened. Section 2080 of the CESA prohibits the take of state-listed endangered or threatened species, but allows for the incidental take of such species as a result of otherwise lawful development projects under section 2081(b) and (c). The California tiger salamander is listed under the CESA. Individual permittees who obtain a federal incidental take permit for the California tiger salamander pursuant to section 10(a)(1)(B) could request that the Director of the California Department of Fish and Wildlife (Department) find the federal documents consistent with CESA.
- *CEQA*: The CEQA is a state statute that is generally analogous to NEPA on the Federal level in requiring the completion of an environmental review for projects that may impact environmental resources. It requires public agencies to review the environmental impacts of proposed projects, prepare and review negative declarations, mitigated negative declarations or environmental impact reports, and to consider feasible alternatives and mitigation measures that would substantially reduce significant adverse environmental effects. It applies to a broad range of environmental resources, such as air quality, water, traffic, and including any state and federally listed wildlife and plant species, as well as sensitive natural communities. Impacts to such species and natural communities must be evaluated under the CEQA. The County of Santa Barbara (County), or other CEQA lead agency, will evaluate a project's consistency with CEQA. Impacts to the California tiger salamander represent one aspect of a CEQA review; however, the potential for impacts to other environmental resources is also reviewed as part of the CEQA compliance process.

Covered Species

The California tiger salamander is the only species covered under this Plan, and therefore it only addresses impacts to and conservation of this species. The California tiger salamander is further described in Section 3 of this Plan.

Alternatives to the Taking

Section 10(a)(2)(A)(iii) of the Act requires that the applicant describe “what alternative actions to the taking the applicant considered, and the reasons why such alternatives are not being utilized.” The only alternative to the proposed incidental taking we considered is for project proponents to avoid any actions that could result in take of federally listed species. This is synonymous with a no-action alternative, in which the project proponent would modify their project to avoid take of listed species altogether. Under this alternative, horticulture activities would be curtailed within the range of these federally listed species (to avoid take of the species) and therefore would not meet the needs of project proponents. Complete avoidance of federally listed species and their associated habitats is not practical or feasible for horticulture activities within the Planning Area.

Section 2 Covered Activities

Only actions listed and described in this section as “Covered Activities” are eligible to receive incidental take authorization through this Plan. Covered Activities associated with each project do not need to be fully contained within the Planning Area to be eligible to participate through the Plan. In other words, irrigation pipelines, roads, infrastructure, or other covered activities that occur within and beyond the Planning Area boundary may seek incidental take authorization for the portions of those covered activities that occur within the boundary of the Planning Area.

The following sections provide a general description for activities that could be included in projects seeking incidental take coverage under this Plan. These activities include other aspects of projects beyond the scope of the production of crops. These other aspects include features and structures that are essential to the full operation of projects. All of the “Covered Activities” would be constructed, maintained and operated in accordance with all relevant local, state, and Federal regulations

Crop Production Areas

The establishment of vineyard, row crops or any other crops involve site preparation, installation of infrastructure, and planting and rotation of crops. Initial site preparation typically involves vegetation clearing, disking, tilling, and other soil preparation techniques to break up hard pans or compaction layers.

Once the site is prepped, crops are planted and ongoing operations and maintenance commence. Crops are cultivated and eventually harvested. After crops are harvested, the cycle resumes with soil preparation, weeding, fertilization, and planting of another crop.

Greenhouses, Hoop Structures, and Shade Structures

Greenhouses, hoop structures and shade structures are common tools used in Santa Barbara County for growing plants. These structures are used to enhance the cultivation of crops and provide a grower with the ability to extend the growing season and control weather variations, which allows for the grower to manipulate the timing of harvests to take advantage of a small window of profitability that is dictated by supply and demand.

Greenhouse structures are permanent structures that would require land clearing, grading, and trenching to establish the foundation, followed by construction of the top structure of the greenhouse. Such structures would be designed to meet local building code. Hoop and shade structures are removable agricultural plant protection structures that shelter crops from the

elements and enhance the growing environment by moderating temperatures, protecting crops from dust and moisture that can cause disease, and extending the growing season.

Hoop structures consist of a metal frame, typically arched, that is anchored into the ground with metal poles. The arched frame is attached to the anchors and an impermeable membrane, typically white or opaque, is stretched across the frame and lashed into place using cordage. Hoop structures vary in height depending on the crop, the width of the hoop tunnel, and the needs of the grower. Most hoop structures are approximately 12 feet in height. However, taller hoop structures, up to 20 feet in height, which may accommodate the use of some farm equipment, have been observed. Typically, there is a gap of approximately 2 to 3 feet between the ground surface and the plastic covering to allow for airflow. Around the perimeter of a field and under certain weather conditions, hoop structure plastic may be extended to the ground to control airflow based on prevailing wind conditions to prevent damage to crops and/or equipment during weather events.

Shade structures are similarly removable agricultural plant protection structures that provide varying degrees of shelter to crops. In Santa Barbara County, they are not currently used as extensively as hoop structures, but usage trends are variable and can depend on crop choice and desired farming method. The primary difference between hoop structures and shade structures is that shade structures typically employ a permeable cover that provides variable amounts of shade and protection from the elements depending on shade cloth (or membrane) color and size of the openings in the permeable mesh.

Roads and Bridges

The establishment and operation of projects engaged in horticulture activities relies on existing roadways or may require construction of new roads. Roads will generally be located on existing agricultural roads onsite to minimize grading and disturbance footprint. Newly constructed roads are first cleared of vegetation with a bulldozer and leveled with a road grader. Shale/rock/gravel and/or asphalt may be used to stabilize the length of the road. Rights-of-way for access roads average 25 feet in total width for permanent roads and 15 feet for temporary roads. Roads require periodic maintenance to correct washouts or other deterioration. Where necessary, culverts and ditches may be installed to facilitate drainage away from the road. The construction or maintenance of bridge may be required in order to provide access to project facilities. Culverts that require a waterway crossing would trigger the need for project proponents to apply for a permit with the U.S. Army Corps of Engineers. Project proponents should notify the Department if their project crosses a stream or is within 100 feet of the top of a streambank. As a responsibly agency under CEQA, the Department has authority over activities in streams and/or lakes that will divert or obstruct the natural flow; or change the bed, channel, or bank (including vegetation associated with the stream or lake) of a river or stream; or use material from a streambed. For any such activities, the project applicant must provide written notification to the Department pursuant to section 1600 et seq. of the Fish and Game Code.

Water Storage Reservoir, Water Wells, Frost Protection Ponds, and Irrigation

Farming and most other agricultural projects require irrigation to allow the controlled application of water through manmade systems to supply water requirements not satisfied by rainfall. Water for irrigation is typically supplied by an agricultural water storage reservoir, water well, or other similar structures. Projects may require the drilling of new wells to provide water for project construction and ongoing facility operations. Water reservoirs store water used for irrigation of crops. Reservoirs are constructed by excavating a depression and constructing an earthen berm on the sides of the reservoir. The earthwork involved in construction of water reservoirs typically employs a cut and fill process to make the embankments. Frost protection ponds for grape vines, trees, hay and other crops have similar functions and structure.

Agricultural reservoirs and frost protection ponds receive water from water wells or other approved sources. Stored water is then delivered from the reservoir to areas of plantings through irrigation lines. Irrigation lines may be buried underground and would require minor trenching to bury the lines. Trenching may be accomplished with back-hoes, track-hoes, or similar other ditching equipment. Excavated soil is placed to one side of the trench in a spoil pile. After a trench is excavated and pipeline assembled, the pipe is laid in the open trench. The excavated trench is backfilled with the previously removed soil.

All water storage reservoirs, frost protection ponds or similar features would be constructed in accordance with local, state, and Federal regulations and project applicants must receive all necessary permits prior to constructing any water storage or irrigation-related features.

Barn, Offices, Winery Facility, Tasting Room, Single-family Home, Parking Lots, and Other Ancillary Facilities

Many projects seeking take coverage under this plan would need to construct and maintain facilities and infrastructure that support business operations. The number, type, and size of facilities required for each project varies depending on the size and nature of the project. Types of facilities and infrastructure could include, but would not be limited to barns, offices, winery production building, tasting rooms, employee dwelling units, bed and breakfast, restrooms, single-family residence, parking lots, etc. All of the aforementioned facilities would have similar effects and include the clearing of vegetation, site preparation, site grading activities, and construction. Land clearing, grading, and construction are typically performed with a bulldozer or other heavy equipment. Project areas are cleared of vegetation and large obstacles, such as trees, rocks, brush, and logs. Timber is only removed where necessary for construction purposes. Site preparation is followed by construction of the proposed structures and other hardscape features such as driveways, parking, perimeter wall, etc. After the foundations are established, the various structures will be constructed.

All infrastructure development would be constructed in accordance with local, state, and Federal regulations and project applicants must receive all necessary permits prior to construction.

Construction of Other Ancillary Features

The establishment of projects may require the construction of other ancillary features to support business operations and/or crop production. Such ancillary features may include, but are not limited to water tanks, nutrient tanks, pesticide storage containers, and septic tanks.

Operation and Maintenance of Projects and Facilities

Covered Activities for the purposes of this Plan include operation and maintenance of newly established project and ancillary facilities as well as the operation and maintenance of existing projects and facilities. Operation and maintenance activities may be routine (e.g., planned) or emergency (i.e., unplanned repairs).

After new crops are established, the crops are cultivated and eventually harvested. After crops are harvested, the cycle resumes with soil preparation, weeding, fertilization and planting of another crop. Ongoing operational management activities include irrigating the crops; drilling of new wells; stock pond maintenance; application of fertilizers; control of insect pests, rodents, and plant maladies and diseases; control of invasive weeds; planting and management of crops; harvesting; and other activities.

Operation and maintenance of permanent access roads may include regrading roads, adding additional surface material (e.g., asphalt, gravel, dirt) to the road and maintaining bar ditches, etc. Roads would require periodic maintenance to correct washouts or deterioration.

Vegetation is typically maintained with mowing equipment (tractor, brush hog, etc.) or herbicide application (by applicators on foot or all-terrain vehicles) once every one to three years.

Onsite Mitigation Areas and/or Off-site Mitigation Banks

As part of this Plan, compensation lands may be permanently conserved to mitigate project impacts to the California tiger salamander. These lands may be immediately adjacent, or in proximity to, project sites on land owned by applicants, or may consist of off-site compensation lands that are adjacent to or in close proximity to existing blocks of conserved lands that support the California tiger salamander. All compensation lands should aim to conserve habitat in a strategic way such that recovery criteria, as specified in the final recovery plan for the Santa Barbara County DPS of the California tiger salamander (Service 2016), will be met in each metapopulation. Section 5 of this Plan further describes these criteria and supporting documents.

Habitat Restoration Activities

Applicants may propose to restore lands that are temporary impacted by Covered Activities to minimize impacts to the California tiger salamander. These lands would be restored and stabilized to reflect pre-existing contours and gradients to the extent practicable. Erosion and sediment controls (e.g., silt fences, fiber rolls, sandbags) would be installed, where necessary, utilizing weed-free materials in areas with a predominance of native plants. The applicant would monitor restoration sites for a minimum of 5 years, or until the Service determines that the

Project's long-term performance standards to be satisfied. If habitat restoration is proposed as part of the applicant's mitigation for unavoidable impacts to the California tiger salamander and its habitat, the applicant should prepare a Habitat Restoration Plan. The Service would have the option to require that the applicant provide permanent protection of habitat as suitable mitigation.

The Habitat Restoration Plan would include detailed specifications for restoring all temporarily disturbed areas, such as seed mixes and application methods. The Plan would also indicate the best time of year for seeding to occur. Restored areas would be maintained and monitored, including weed removal (focused on noxious weeds and excluding non-native annual grasses), to reach a goal of a self-regenerating grassland. All planting and seeding would occur the first year after construction is complete, after the first significant rain event of the year (i.e., more than 0.25 inches of precipitation). The Plan would also include success criteria for all habitat restoration that is based on suitability for the California tiger salamander.

Section 3 Environmental Setting and Covered Species

Climate

The Planning Area is located in Santa Barbara County surrounding the city of Los Alamos. The area generally follows the boundaries of the East and West Lost Alamos Metapopulation Areas for the Santa Barbara County DPS of the California tiger salamander and includes an additional 4,971 acres to the east of the Los Alamos Metapopulation Area to encompass potential breeding habitat for the California tiger salamander. The regional climate is mild and typifies a Mediterranean coastal climate throughout the year that is characterized by long, dry summers and short, wet winters. Fog is common during the late spring and summer months and moderate summer temperatures. Temperatures range from 50 degrees Fahrenheit to 100 degrees Fahrenheit during the summer, with an average of 62 degrees Fahrenheit, and from 40 degrees Fahrenheit to 64 degrees Fahrenheit during the winter months, with an average temperature of 52 degrees Fahrenheit. On average, the warmest month is September and the coolest month is January. Precipitation within the planning area varies greatly from season to season and with each location. The average annual precipitation is approximately 15.3 inches (County of Santa Barbara 2020). Most of the precipitation occurs from November to April and highest rainfall occurring in February (Western Regional Climate Center 2016). Climate studies have determined that drought periods occur regularly and may last as long as a decade or more. Prior to the current, the most recent drought lasted from 1986 to 1991, during which water storage in the county's major reservoirs was nearly depleted. With a mean annual rainfall of 18.55 inches, only 6.41 inches of rain were recorded in Santa Barbara in 2007; this was the driest year of record.

Topography/Geology

In general, the Planning Area is characterized as gentle-to-moderate hillside slopes vegetated primarily in grassland suitable for grazing. The underlying soils generally consist of unique soil formations, including dune fields (e.g., Orcutt Terrace Dune Sheet), folded and faulted ridges (e.g., Casmalia, Purisima, and Santa Rita Hills), and adjacent valleys (e.g., Los Alamos and Santa Rita Valleys) (Hunt 1993, Ferren and Hecht 2003).

The Planning Area is largely described as annual grassland which is comprised largely of ripgut (*Bromus diandrus*), barley (*Hordeum* sp.), rye (*Lolium* sp.); wild oats (*Avena* sp.), croton (*Croton californica*), fiddleneck (*Amsinkia intermedia*), lupine (*Lupinus* sp.), ragweed (*Ambrosia* sp.), and cranesbill (*Erodium* sp.). Perennial shrubs, including coyote brush (*Baccharis pilularis*), goldenbush (*Isocoma* sp.) and coastal sage scrub species (*Artemesia*, *Salvia*,

Eriogonum, *Encelia*) are scattered across the site in patches, interspersed with oak (*Quercus agrifolia*) woodland and savannah.

Hydrology/Streams, Rivers, Drainages

The Planning Area is generally located between Santa Rita Hills and Solomon Hills within the Central California Coastal Hydrologic Unit. The area crosses the Los Alamos Valley and spans portions of the Santa Maria and San Antonio watersheds to the north and south, respectively.

The Planning Area contains numerous seasonal ponds, such as vernal pools (seasonal, shallow wetlands that alternate between dry and wet periods) and sag ponds (ponds located in depressions formed at a strike-slip fault). These pools range in size from small ponds to shallow lakes. There are also numerous man-made ponds or modified natural ponds that create various types of artificial aquatic habitat. These features are often ponds that are created for the purposes of providing water for cattle when a berm is created in a natural drainage corridor, forming a pond behind it.

Existing and Surrounding Land Uses

Land use within the planning area includes agriculture, residential, grazing lands, open lands, and urban areas. Vineyards cover large portions of the Planning Area, as this area is popular for wine cultivation and overlaps with the Santa Maria Valley and Santa Ynez Valley American Viticultural Areas. State Highway 101 bisects the Planning Area area. Many other paved and unpaved roads, which are much smaller in size and traffic, traverse the Planning Area.

Covered Species

The Santa Barbara County DPS of the California tiger salamander is the only species addressed in this plan. This section provides a concise review of pertinent information on the Santa Barbara County DPS of the California tiger salamander, including a species description, review of the species' life history, status and distribution, reasons for the species decline, as well as the threats and survival and recovery needs of these species.

California Tiger Salamander Species Information

Legal Status

The Santa Barbara County DPS of California tiger salamander was listed as endangered in September 2000 (65 FR 3096). The California tiger salamander is listed by the State of California throughout its range as a threatened species (California Code of Regulations 2010). In 2004, the Service designated critical habitat for the Santa Barbara County DPS of the California tiger salamander (69 FR 68568). The Service finalized a 5-year review for the Santa Barbara County California tiger salamander on November 13, 2009 (Service 2009), and the DPS was re-assigned a recovery priority number of 3C (from 5C), indicating that the DPS has a high potential for recovery, a high degree of threat, and is in conflict with construction or development (48 FR 43105).

Natural History

The California tiger salamander is a large and stocky terrestrial salamander with small eyes and a broad, rounded snout. Adults may reach a total length of 207 millimeters (8.2 inches), with males generally averaging about 200 millimeters (8 inches) total length, and females averaging about 170 millimeters (6.8) inches in total length. For both sexes, the average snout-to-vent length is approximately 90 millimeters (3.6 inches) (65 FR 3096). The small eyes have black irises and protrude from the head. Coloration consists of white or pale yellow spots or bars on a black background on the back and sides. The belly varies from almost uniform white or pale yellow to a variegated pattern of white or pale yellow and black. Males can be distinguished from females, especially during the breeding season, by their swollen cloacae (a common chamber into which the intestinal, urinary, and reproductive canals discharge), larger tails, and larger overall size (Loredo and Van Vuren 1996, p. 898).

Historically, the Santa Barbara County California tiger salamander inhabited low-elevation (generally under 475 meters (1,500 feet)) seasonal ponds and associated grassland, oak savannah, and coastal scrub plant communities of the Santa Maria, Los Alamos, and Santa Rita Valleys in the northwestern area of Santa Barbara County (Shaffer et al. 1993, p. 4). Seasonal ponds, such as vernal pools (seasonal, shallow wetlands that alternate between dry and wet periods) and sag ponds (ponds located in depressions formed at a strike-slip fault), are typically used by California tiger salamanders for breeding. However, with the loss of many vernal pools through farmland conversion and urban and suburban development, ephemeral and permanent ponds that have been created for livestock watering are now frequently used by the species (Shaffer et al. 1993, pp. 25-26, Fisher and Shaffer 1996).

California tiger salamanders spend the majority of their lives in upland habitats and cannot persist without them (Trenham and Shaffer 2005, p. 1165). The upland component of California tiger salamander habitat typically consists of grassland savannah, but includes grasslands with scattered oak trees, and scrub or chaparral habitats (Shaffer et al. 1993, p. 4; 65 FR 3096). Juvenile and adult California tiger salamanders spend the dry summer and fall months of the year in the burrows of small mammals, such as California ground squirrels (*Otospermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*) (Loredo et al. 1996, p. 283; Cook et al. 2006, p. 216). Burrow habitat created by ground squirrels and utilized by California tiger salamanders suggests a commensal relationship between the two species (Loredo et al. 1996, p. 284). Movement of California tiger salamanders within and among burrow systems continues for at least several months after juveniles and adults leave the ponds (Trenham 2001, p. 345). Active ground-burrowing rodent populations are likely required to sustain California tiger salamanders because inactive burrow systems become progressively unsuitable over time (69 FR 47216). Loredo et al. (1996, p. 284) found that California ground squirrel burrow systems collapsed within 18 months following abandonment by, or loss of, the mammals.

California tiger salamanders can undertake long-distance migrations, and can disperse long distances as well. They have been recorded traveling the second-longest distance among salamanders. California tiger salamanders move more readily among breeding ponds than other members of the family, a characteristic found consistently among different study sites (Trenham et al. 2001, p. 3527; Wang et al. 2011, p. 917). Many studies have recorded migration and

dispersal distances by adult and juvenile California tiger salamanders, through radio-tracking (Trenham 2001, p. 344), visual tracking (Loredo et al. 1996, p. 283) and upland drift fence capture (Trenham and Shaffer 2005, p. 1163; Orloff 2007, p. 13, Orloff 2011, p. 268). None of these studies were conducted within the range of the Santa Barbara County California tiger salamander, but are considered to be the best available scientific information on the species.

Movement of California tiger salamanders is reviewed in Service (2009) and Searcy et al. (2013). In general, studies show that adults can move 2 kilometers (1.2 miles) to more than 2.2 kilometers (1.4 miles) from breeding ponds (Trenham et al. 2001, p. 3526; Orloff 2011, p. 270). Estimates of where 95 percent of the population occur range from 620 meters (0.38 miles) up to 1867 meters (1.16 miles) (Trenham and Shaffer 2005, p. 1165; Searcy and Shaffer 2008, p. 1000; Searcy and Shaffer 2011, p. 82; Searcy et al. 2013, p. 84, Searcy *in litt*, 2014) of a breeding pond. Searcy and Shaffer (2011, p. 80) estimate that California tiger salamanders are physiologically capable of migrating up to 2484 meters (approximately 1.54 miles) in a breeding season.

California tiger salamanders appear to have high site-fidelity, often returning to their natal pond as adults and commonly returning to the same terrestrial habitat areas after breeding (Orloff 2007, p. 38; Orloff 2011, p. 273; Trenham 2001, p. 3525). However, a portion of the population disperses from their natal pond to other breeding ponds, giving this species its unique metapopulation structure. Trenham et al. (2001, pp. 3525-3526) found no significant difference between dispersal probabilities between first-time breeders and experienced breeders. Wang et al. (2009, p. 1371) studied genetic distinctness across 16 Central DPS California tiger salamander breeding sites (Fort Ord, Monterey County), and confirmed genetic differences at almost every site. Work is currently being conducted by the University of California, Los Angeles to determine the genetic distinctness across metapopulations in Santa Barbara County. Initial results show the northern two metapopulations (West Santa Maria and East Santa Maria) are more genetically similar than the four southern metapopulations (West Los Alamos, East Los Alamos, Purisima Hills, and Santa Rita Valley) (Toffelmier and Shaffer 2017).

Winter rain events trigger California tiger salamanders to emerge from refugia and seek breeding ponds (Trenham et al. 2000, p. 365). After mating, females attach their eggs to submerged twigs, grass stems, vegetation, or debris (Storer 1925, p. 65; Twitty 1941, p. 2). In drought years, the seasonal pools may not form and the adults may not breed (Barry and Shaffer 1994, p. 159). California tiger salamander eggs hatch into larvae within 10 to 28 days, (Hansen and Tremper 1993, p. 4; Storer 1925, p. 67), with observed differences likely related to water temperatures. Generally, 10 weeks is required to allow sufficient time to metamorphose. After the larval developmental period, they emerge as terrestrial metamorphic salamanders, between approximately May and August (Trenham et al. 2000, p. 370).

Metamorphosed juveniles leave the breeding sites in the late spring or early summer. Like the adults, juveniles may emerge from these retreats to feed during nights of high relative humidity (Storer 1925, p. 70; Shaffer et al. 1993, p. 7) before settling in their selected upland sites for the dry, hot summer months. While most California tiger salamanders rely on rodent burrows for shelter, some individuals may utilize soil crevices as temporary shelter during upland migrations (Loredo et al. 1996, p. 238). Mortality of juveniles during their first summer exceeds 50 percent

(Trenham et al. 2000, p. 371). Emergence from upland habitat in hot, dry weather occasionally results in mass mortality of juveniles (Holland et al. 1990, p. 218).

Rangewide Status

The Santa Barbara County DPS of the California tiger salamander is restricted to northern Santa Barbara County in southern California. This population constitutes the southernmost range of the species (65 FR 3098). At the time of publication of the emergency listing rule in January 2000, the Santa Barbara County California tiger salamander was known from 14 ponds. The emergency and final listing rules acknowledged that other potential breeding ponds or pond complexes may exist, but could not be surveyed at that time due to restricted access. The Santa Barbara County California tiger salamander is found in six metapopulation areas: (1) West Santa Maria/Orcutt, (2) East Santa Maria, (3) West Los Alamos, (4) East Los Alamos, (5) Purisima Hills, and (6) Santa Rita Valley (Service 2009). Each metapopulation areas encompasses both currently occupied, and potentially occupied suitable habitat for each metapopulation. Critical habitat for the Santa Barbara County California tiger salamander has been designated within portions of each of the six metapopulations (69 FR 68568).

Currently, there are approximately 60 known extant California tiger salamander breeding ponds in Santa Barbara County (Service 2009, p. 9) distributed across the six metapopulations. Since listing, Service and the Department developed guidance for protocol survey efforts (Service and Department 2003), and this guidance has aided in the detection of additional breeding ponds discovered post-listing. Several of the additional ponds were discovered as a result of surveys conducted as a part of proposed development or land conversion projects.

The Santa Barbara County DPS of the California tiger salamander is threatened primarily by the destruction, degradation, and fragmentation of upland and aquatic habitats, primarily resulting from the conversion of these habitats by urban, commercial, and intensive agricultural activities (Service 2016). Additional threats to the species include hybridization with introduced nonnative barred tiger salamanders (*A. tigrinum mavortium*) (Service 2016, p. I-16), destructive rodent-control techniques (e.g., deep-ripping of burrow areas, use of fumigants) (Service 2016, p. I-10), reduced survival due to the presence of mosquitofish (*Gambusia affinis*) (Leyse and Lawlor 2000, p. 76), and mortality on roads due to vehicles (65 FR 3096). Disease, particularly chytridiomycosis and ranaviruses, and the spread of disease by nonnative amphibians, are discussed in the listing rule as an additional threat to the species (69 FR 47232).

Recovery

The goal of the recovery plan for the Santa Barbara County DPS of California tiger salamander (Service 2016) is to reduce the threats to the population to ensure its long-term viability in the wild, and allow for its removal from the list of threatened and endangered species. The interim goal is to recover the population to the point that it can be downlisted from endangered to threatened status.

Downlisting may be warranted when the recovery criteria below have been met in a sufficient number of metapopulation areas such that the Santa Barbara County DPS of the California tiger salamander exhibits increased resiliency and redundancy to prevent endangerment in the foreseeable future.

Delisting may be warranted when the following recovery criteria have been met in a sufficient number of metapopulation areas to support long-term viability of the Santa Barbara DPS of the California tiger salamander.

1. At least four functional breeding ponds are in fully preserved status per metapopulation area.
2. A minimum of 252 hectares (623 acres) of functional upland habitat around each preserved pond is in fully preserved status.
3. Adjacent to the fully preserved ponds and fully preserved upland habitat, a minimum of 659 hectares (1,628 acres) of additional contiguous, functional upland habitat is present, which is at least 50 percent unfragmented and partially preserved.
4. Effective population size (N_e) in the metapopulation is, on average, increasing for 10 years.
5. Management is implemented to maintain the preserved ponds free of non-native predators and competitors (e.g., bullfrogs and fish).
6. Risk of introduction and spread of non-native genotypes is reduced to a level that does not inhibit normal recruitment and protects genetic diversity within and among metapopulations.
7. The effects of vehicle-strike mortality have been minimized to a level that does not threaten viability and protects connectivity within metapopulations, including providing means for effective migration and dispersal in a roadway-impacted landscape.

The overall objectives of the recovery plan are to (1) protect and manage sufficient habitat within the metapopulation areas to support long-term viability of the Santa Barbara County Distinct Population Segment of the California tiger salamander and (2) reduce or remove other threats to the Santa Barbara County Distinct Population Segment of the California tiger salamander.

Status of the California Tiger Salamander within the Planning Area

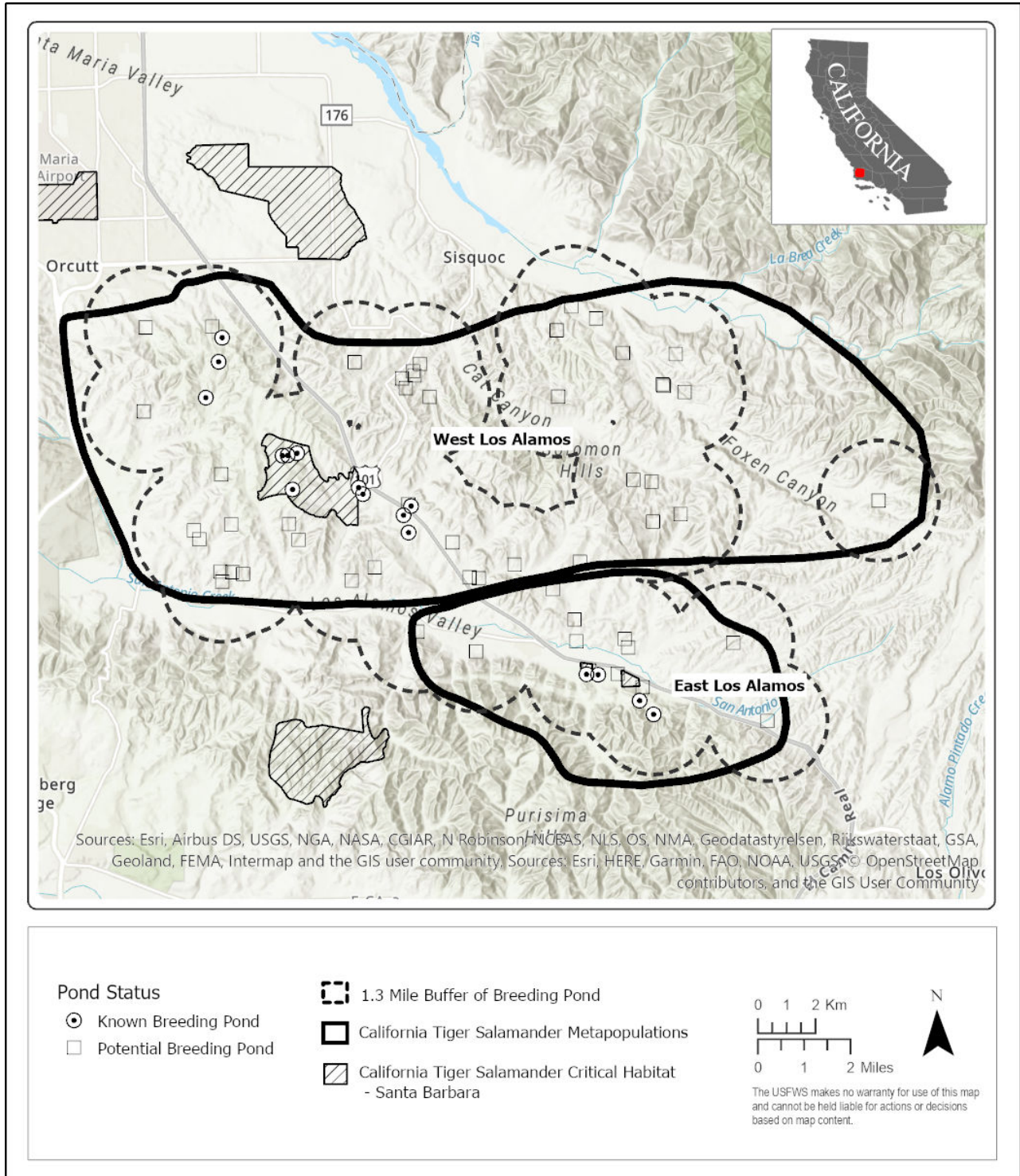
The California tiger salamander occupies both aquatic and upland habitats within the Planning Area. Aquatic breeding habitat for California tiger salamanders is characterized as ponds with seasonal, shallow wetlands that alternate between dry and wet periods. For regulatory purposes, ponds with a documented breeding California tiger salamander population are identified as known breeding ponds. Ponds with the appropriate hydroperiod to support California tiger salamander breeding (i.e., at least 10 weeks) and surrounding upland habitat, but California tiger salamander breeding has not been documented, are identified as potential breeding ponds. Potential breeding ponds may have breeding California tiger salamander populations that have not been documented for a variety of reasons, including insufficient survey effort. Salamanders can forego breeding for 2 to 8 years, resulting in negative aquatic surveys despite the presence of the species in adjacent uplands (Trenham et al. 2000). For the purpose of this document, potential breeding ponds are treated the same as known breeding ponds. For project purposes, potential breeding ponds are presumed to be known breeding ponds unless a negative finding is

achieved by correctly and completely following the Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (Service and Department 2003).

The Planning Area includes 70 pond features identified on the Service's California tiger salamander map (Service 2019). Of these features, 16 are known breeding ponds in which California tiger salamander breeding activity has been documented. The remaining 54 pond features were mapped using aerial imagery, project-specific data, and data provided by landowners or project proponents.

The undeveloped habitat in the Planning Area contains small mammal burrows and, therefore, is suitable upland California tiger salamander habitat. All areas within 1.3 miles of the 70 known and potential breeding ponds is assumed to be occupied by the species unless surveys, completed in accordance with the *Interim Guidance on Site Assessment and Field Surveys for Determining Presence of a Negative Finding of the California Tiger Salamander* (Service and Department 2003), support a negative finding. Figure 2 shows the known and potential California tiger salamander breeding ponds, a 1.3-mile buffer around each of the breeding ponds within the Planning Area.

Figure 2. California Tiger Salamander Habitat in the Planning Area



Section 4

Biological Impacts and Take Assessment

Anticipated Effects on the California Tiger Salamander

The majority of the 82,272-acre Planning Area is within the known dispersal distance (1.3 miles) of known or potential California tiger salamander breeding ponds. We anticipate most projects seeking incidental take coverage under this Plan would include the conversion of suitable upland California tiger salamander habitat to other uses associated with agricultural and cultivation activities. Conversion of land to vineyard, crops, or other agricultural uses as well as construction of project facilities and associated infrastructure, will result in the temporary and permanent disturbance of California tiger salamander upland habitat. We also anticipate some projects may need to conduct activities within suitable aquatic California tiger salamander habitat. Artificial and natural breeding ponds may require maintenance during the non-breeding season. These activities can provide important habitat benefits for future breeding seasons.

Ground disturbance associated with project activities have the potential to adversely affect California tiger salamanders that occur in or within dispersal distance of the project areas. California tiger salamanders dispersing from areas adjacent to covered lands are subject to mortality or injury from earth-moving equipment, debris, and worker foot traffic vehicle strikes and construction activities associated with the proposed projects.

California tiger salamanders may experience a significant disruption of normal behavioral patterns from work activities and the associated noise and vibration that makes them susceptible to injury or mortality. This disruption could cause California tiger salamanders to leave or avoid suitable habitat and may increase the potential for predation, desiccation, competition for food and shelter, or strike by vehicles on roadways.

The area surrounding the individual projects may be altered due to changes in vegetation structure and environmental conditions to the extent that rodent and small mammal abundance or use is reduced. This would constitute a loss of suitable refugia habitat for California tiger salamanders. California tiger salamanders remaining in burrows may be killed or injured by the large machinery used to conduct ground-disturbing activities, by grading activities, or they may become entombed in their burrows and die if the entrance to their upland sheltering habitat is crushed or covered. Large machinery and other vehicles and construction equipment could also spill or leak industrial chemicals, fuels, and lubricants that could result in fouling or poisoning of California tiger salamanders and contamination of their habitat.

Activities that occur during the rainy season would likely cause greater impacts to California tiger salamanders than activities during the dry season because the species is typically more active during the rainy season. During periods of rainfall (typically greater than 0.5 inch of rain

in a 24-hour period), we expect a higher likelihood of California tiger salamanders dispersing above ground towards or away from breeding ponds in the vicinity of the project areas. Any salamanders moving through the project areas would be at risk of injury or death caused by vehicles, equipment, or workers.

Roads are a source of direct mortality for California tiger salamanders traveling to and from breeding areas. Significant numbers of California tiger salamanders are killed by vehicular traffic while crossing roads (Hansen and Tremper 1993, S. Sweet in litt. 1993, J. Medeiros pers. comm. 1993; all cited in Service 2005). California tiger salamander road-kill mortality in the vicinity of breeding sites has been reported to be 25-72 percent of the observed salamanders crossing roads (Twitty 1941, Service 2005, Launer and Fee 1996). Jackson (1996) stated that roads separating breeding and upland habitat can be the cause of significant population declines and even local extinctions for the related spotted salamander (*Ambystoma maculatum*). California tiger salamanders could be killed or injured by worker traffic during construction, operations, and maintenance activities. The construction of new roads could result in increased mortality of California tiger salamanders. California tiger salamanders most often killed by vehicle strikes are those making breeding migrations. This risk would be greatest during or after rainfall when individuals may be moving through the project area towards or away from breeding ponds.

Roads and highways can also create permanent barriers, isolating metapopulations (Service 2016) and contribute to habitat fragmentation and salamander mortality. California tiger salamanders require both breeding and upland habitat in proximity such that the animals can move between the two. Consequently, impediments to movement such as roads or barriers, or loss of either habitat type are a threat to the species' normal habitat use. Barrier-free landscapes are essential for California tiger salamander dispersal and annual migration (Loredo et al. 1996). Access roads proposed as part of the covered activities would contribute to this habitat fragmentation and salamander mortality. Barriers to migration and dispersal also include habitat entirely lost to development, as well as suboptimal habitats that do not provide adequate refuge in the form of small mammal burrows or other cover. Covered activities such as conversion of habitat to vineyards, row crops or other agricultural uses and construction of roads would result in loss of upland habitat that could contribute to barriers to migration and dispersal.

Other impacts of roads to California tiger salamanders include predator attraction, disruption of normal animal behavior, home range shifts, altered movement patterns, altered reproductive success, invasive species (by serving as dispersal corridors), landscape pollution (via hydrological changes, increased sedimentation, vehicle by-products and compounds), and increased human use of an area (Trombulak and Frissel 2000, Andrews et al. 2008).

Trash left during or after project activities could attract predators to work sites, which could, in turn, prey on California tiger salamanders. For example, raccoons (*Procyon lotor*) and feral cats (*Felis catus*) are attracted to trash and also prey opportunistically on California tiger salamanders.

While capture and relocation of California tiger salamanders is expected to reduce the number of individuals killed or injured by project construction activities, capture and relocation could result in the injury or death of individual California tiger salamanders. Although survivorship for translocated California tiger salamanders has not been estimated, survivorship of translocated

wildlife, in general, is reduced due to intraspecific competition, lack of familiarity with the location of potential breeding, feeding, and sheltering habitats, and increased risk of predation.

Releasing amphibians following a period of captivity, during which time they can be exposed to infections, may cause an increased risk of mortality in wild populations. Amphibian pathogens and parasites can also be carried between habitats on the hands, footwear, or equipment of fieldworkers, who can spread them to localities containing populations which have had little or no prior contact with such pathogens or parasites. For example, chytrid fungus is a water-borne fungus that can be spread through direct contact between aquatic animals and by a spore that can move short distances through the water. The fungus only attacks the parts of an animal's skin that have keratin (thickened skin), such as the mouthparts of tadpoles and the tougher parts of adults' skin, such as the toes. It can decimate amphibian populations, causing fungal dermatitis, which usually results in death in 1 to 2 weeks. Infected animals may spread the fungal spores to other ponds and streams before they die. Once a pond has become infected with chytrid fungus, the fungus stays in the water for an undetermined amount of time. Relocation of individuals captured from the project area could contribute to the spread of chytrid fungus. In addition, infected equipment or footwear could introduce chytrid fungus into areas where it did not previously occur. Other pathogens could be similarly introduced into uninfected localities.

Use of Impacts to Habitat as a Proxy for Take

Because quantification of the number of California tiger salamanders that would be taken incidental to Covered Activities is not possible given available data, relying on impacts to occupied California tiger salamander habitat is a suitable surrogate to estimate the amount of take that is likely to occur. Within this plan, "occupied California tiger salamander habitat" is defined as:

- 1) Areas within California tiger salamander dispersal distance (1.3 miles) from a documented known breeding pond;

OR

- 2) Where California tiger salamanders are assumed present by the applicant/permittee (no surveys have been conducted).

Calculating Impacts to California Tiger Salamanders

The California Tiger Salamander Conservation Strategy (Service 2020) explains the methodology for calculating impacts to California tiger salamander and its habitat. The mitigation methodology outlined in the California Tiger Salamander Conservation Strategy is based on work by Searcy and Shaffer (2008) who demonstrate that there are two components of habitat loss for California tiger salamanders: (1) project footprint plus (2) "deficit wedge." The project footprint is the direct loss of habitat where the impact occurs, which is straight-forward in concept. More complex is the "deficit wedge" that results from the impact to habitat. The deficit wedge is the habitat that becomes isolated from a given breeding pond as a consequence of the impact and is rendered inaccessible to a California tiger salamander migrating in a straight line away from the center of a pond. The total impact of the project includes a sum of the footprint and the deficit wedges (or shadows) where habitat has become inaccessible to salamanders from ponds within dispersal distance of the project.

In calculating mitigation owed for impacts to California tiger salamander and/or the habitat that supports them, impacts that impede dispersing salamanders (shadowed impacts) are treated differently from impacts that do not impede dispersing salamanders. Impacts that impede dispersing California tiger salamander are calculated using the methodology outlined in Searcy and Shaffer (2008), as described above. The deficit wedge (shadow) described above is only created by impermeable, long-term, or vertical impacts that impede California tiger salamanders that are dispersing across the landscape. Examples of impacts that do not impede dispersing California tiger salamander include: temporary impacts occurring over one dry season, certain linear features such as roads without curbs or medians, buried pipelines, restoration activities, etc. For temporary impacts occurring over one dry season (approximately May to October), there is no shadow because California tiger salamanders are not migrating or dispersing during the dry season. Calculating mitigation owed for permeable impacts only includes the direct loss of habitat within the project footprint where the impact to habitat occurs.

Not all temporary impacts occur over one dry season. For impacts spanning more than one dry season, the aforementioned methodology does not account for impacts that could occur to migrating California tiger salamanders over a rainy season. While the effects are still temporary, a temporary deficit wedge is created over the rainy season because the impact would impede salamanders that are migrating or dispersing across the landscape during the rainy season rendering the habitat within the deficit wedge unusable to individuals. We assess the temporary effects by examining the lifetime reproductive success of California tiger salamanders. Lifetime reproductive success is typically low because metamorphs have low survivorship; in some populations, less than 5 percent survive to breed (Trenham 1998). In addition, metamorphs require an extended amount of time before they reach sexual maturity (4 to 5 years) (Trenham et al. 2000). Less than 50 percent of first-time breeding California tiger salamanders typically survive to breed more than once (Trenham et al. 2000). Therefore, we assume that an impact lasting more than 5 years could affect the entire reproductive output of an individual California tiger salamander, such that the impact is the same as a permanent impact. Thus, any impact lasting 5 or more years will be treated as a permanent impact as described above. If an impact occurs over one rainy season, we assume that 1/5 of the local population is affected during that rainy season and we calculate the impact of the deficit wedge as 1/5 of the total reproductive value of the wedge. The following table shows the percentage of the population and the associated percentage of the deficit wedge for which mitigation would be required.

Years of Disturbance	Percent of Deficit Wedge to Mitigate
1	20
2	40
3	60
4	80
5	100

Impacts Analysis and Estimated Incidental Take

Covered Activities under this Plan are reasonably certain to result in take of California tiger salamander and impacts to their habitat. Take of California tiger salamanders in the form of mortality or injury of adults or larvae may result from crushing and collision; impacts to breeding and upland habitat; increased habitat fragmentation; and changes from one vegetation community to another. Take of California tiger salamanders is expected to result from human and equipment movement and ground disturbance associated with construction and installation of well pads, pipelines, access roads, electrical distribution lines and substations, and off-site reservoirs. Operation and maintenance, and decommissioning of these activities, are also expected to result in take of the California tiger salamander. Take of California tiger salamanders and impacts to their habitat will differ with methodologies implemented and with activity level when these activities occur.

We cannot definitively estimate the number of California tiger salamanders that will be taken because no density estimate (e.g., number of California tiger salamanders/acre) for the planning area has been or could be calculated. Take of California tiger salamanders is also difficult to quantify because: 1) individuals are small, making them difficult to locate, which makes encountering dead or injured individuals unlikely; 2) California tiger salamander losses may be masked by temporal fluctuations in numbers; 3) California tiger salamanders spend the majority of their lifespan underground; and 4) the species is primarily active at night. Although we cannot predict the exact number of individual California tiger salamanders that will be incidentally taken, the Service is providing impacts to habitat as a proxy to quantify take levels and define the permitted limits. The following table shows the total amount of California tiger salamander habitat loss (occurring outside the designated critical habitat boundaries) allowed under this plan.

California Tiger Salamander Metapopulation	Acreage Within Each Metapopulation Area*	Amount of Available California Tiger Salamander Habitat (Acres)	Upland Habitat Needed in Fully Preserved Status to Meet Recovery Criteria (Acres)	Habitat Available for Project Impacts without Precluding Recovery (Acres)	Allowed Permanent Impacts to Habitat (Acres; 10% of Available Habitat)
East Los Alamos	17,017	11,099	2,492	8,607	861
West Los Alamos (*plus an additional 4,971 acres)	65,255	43,439	2,492	40,947	4,095

Although this Plan allows for the loss of habitat shown in the table above, the configuration of impacts must be taken into account to ensure recovery criteria is not precluded. The strategy to recover the Santa Barbara County DPS of the California tiger salamander focuses on alleviating the threat of habitat loss and fragmentation in order to increase population resiliency (i.e., ensure a large enough metapopulation to withstand stochastic events) and redundancy (i.e., a sufficient number of metapopulations to ensure the species can withstand catastrophic events) while maintaining current representation (genetic and ecological diversity). Recovery of this species will be achieved through the conservation of remaining aquatic and upland habitat that provides essential connectivity, reduces fragmentation, and sufficiently buffers against encroaching development. Large sites functionally connected to other permanently conserved lands are preferred for mitigation as they would likely contribute the greatest toward meeting recovery criteria. Therefore, the Service will review each project requesting take coverage under this Plan to ensure the configuration or siting of a particular project does not hinder recovery in either of the metapopulation areas included in this plan.

While we cannot estimate the number of California tiger salamander that will be taken as a result of most covered activities, access roads are a common aspect project activities where the potential exists to document injury or mortality of individual California tiger salamanders. Therefore, we provide take coverage for access roads in the form of injury or mortality of individual California tiger salamanders. Under this Plan, we allow for the take in the form of injury or mortality of up to five (5) individuals California tiger salamanders per year as a result of vehicles using access roads.

Section 5

Conservation Program/Measures to Minimize and Mitigate for Impacts

Biological Goals and Objectives

Section 10(a)(2)(A) of the Act requires that a conservation plan specify the measures that the permittee will take to minimize and mitigate to the maximum extent practicable the impacts of the taking of any federally listed wildlife species as a result of covered activities addressed by the plan.

Conservation plans must establish biological goals and objectives. The purpose of the biological goals is to ensure that the operating conservation program in the conservation plan is consistent with the conservation and recovery goals established for the species. The goals are also intended to provide to the applicant an understanding of why these actions are necessary. These goals are developed based upon the species' biology, threats to the species, the potential effects of the Covered Activities, and the scope of the conservation plan.

Goal 1: Avoid and minimize take and related disturbance to the California tiger salamander and its habitat within the project areas.

Objective 1.1 Avoid and minimize the potential for migrating California tiger salamanders to be adversely affected by coming in contact with project related equipment or be adversely affected as a result of ground disturbing activities.

Objective 1.2 Remove any California tiger salamanders from impact areas by performing surveys prior to and, if necessary, during construction, and relocate any individuals to suitable habitat outside impact areas.

Objective 1.3 Site project impacts in areas outside of occupied and suitable habitat for the California tiger salamander to the maximum extent feasible.

Objective 1.4 Restore disturbed or degraded habitat to areas to original conditions, as feasible, to emulate the previous conditions and ensure the habitat is improved and functioning for the benefit of the species.

Goal 2: Preserve, maintain, and restore occupied and suitable aquatic and upland habitat for California tiger salamander in the Planning Area.

Objective 2.1 Maintain or increase the value of all aquatic habitats in project or mitigation areas known to support or with potential to support the California tiger salamander.

Objective 2.2 Maintain or increase the suitable and accessible upland habitat adjacent to all known or potential breeding ponds in project or mitigation areas for California tiger salamander.

Objective 2.3 Eliminate or reduce non-native wildlife that depredates California tiger salamander in known and potential upland and aquatic habitat within the Planning Area.

Objective 2.4 Control hybrid California tiger salamanders in aquatic habitat.

Goal 3: Provide compensatory mitigation to help meet recovery criteria and/or support long-term viability of the California tiger salamander.

Objective 3.1 To mitigate impacts to the California tiger salamander, applicants will protect and manage habitat to ensure conservation benefits for the species.

Compensatory Mitigation for the California Tiger Salamander

In support of goal 3, objective 3.1, compensatory mitigation will be implemented in accordance with the Conservation Strategy and Mitigation Guidance for the California tiger salamander (Service 2020) or the most current version and the support recovery needs as stated in the recovery plan (Service 2016) for the California tiger salamander, Santa Barbara DPS. The final recovery plan (Service 2016) for the California tiger salamander, Santa Barbara DPS establishes the following recovery criteria to support long-term viability:

1. At least four functional breeding ponds are in fully preserved status per metapopulation area.
2. A minimum of 623 acres of functional upland habitat around each preserved pond is in fully preserved status.
3. Adjacent to the fully preserved ponds and fully preserved upland habitat, a minimum of 1,628 acres of additional contiguous, functional upland habitat is present, which is at least 50 percent unfragmented and partially preserved.
4. Effective population size in the metapopulation is, on average, increasing for 10 years.
5. Management is implemented to maintain the preserved ponds free of non-native predators and competitors (e.g., bullfrogs and fish).

6. Risk of introduction and spread of non-native genotypes is reduced to a level that does not inhibit normal recruitment and protects genetic diversity within and among metapopulations.

Avoidance, Minimization, and Mitigation Measures

Section 10 of the Act requires that conservation plans “minimize and mitigate” the impacts of take authorized by an incidental take permit, and that issuance of the permit will not “appreciably reduce the likelihood of the survival and recovery of the species in the wild.” In general, conservation plans should include mitigation programs that are based on sound biological rationale, and are practicable and commensurate with the impacts of the project on species for which take is requested. If the proposed project is expected to result in permanent habitat loss, then the mitigation strategy must include compensatory mitigation consisting of the permanent preservation of suitable habitat or similar measures. Applicants under this plan must provide mitigation for permanent impacts to the California tiger salamander and its habitat.

In accordance with these guidelines and the requirements of the federal Endangered Species Act, the conservation program of this Plan is intended to achieve its biological goals and objectives and to ensure that the impacts of Covered Activities on California tiger salamander are minimized and mitigated to the maximum extent practicable. Avoidance and minimization measures are provided below.

Measures to Avoid and Minimize Impacts

1. During the project planning phase, applicants will site all impacts as far away from known and potential California tiger salamander breeding habitats and avoid high quality upland and dispersal habitat as possible.
2. At least 15 days prior to ground-disturbing activities, the applicant will submit the names and credentials of biologists and monitors to the Service for approval to conduct the minimization measures outlined below. Excluding an emergency activity, no project activities will begin until the applicant has received notice from the Service that the biologists and monitors are approved to do the work.
3. A Service-approved biologist will conduct a biological resources training program for all construction workers and their contractors to minimize potential impacts to the California tiger salamander and sensitive habitats. Training will occur prior to initial ground disturbing activities and be repeated, annually and as needed for new workers for the duration of each project covered by the permit. The training program will be reviewed and approved by the Service and will include a description of: (1) important biological resources within their project site, specifically California tiger salamander that have potential to occur within or adjacent to work areas; (2) the applicable avoidance and minimization measures; (3) the roles and responsibilities of personnel; and (4) communication protocols if California tiger salamanders are detected. Applicants who submit their training programs along with their permit applications should expect to receive an approval at the time they receive their Permit. Applicants who submit their

training programs after they submit their permit application should expect to receive an approval within 30 days of receipt of the training program.

4. A Service-approved biologist will periodically review and monitor ground disturbing activities and restoration efforts and will be responsible for ensuring that conditions of approval are being enforced and that success criteria are being met. Except for emergency situations, a Service-approved biologist will have the authority to temporarily halt activities if permit requirements and conditions are not being met.
5. Prior to ground disturbing activities, all grading limits and construction boundaries, including staging areas, parking, and stockpile areas, will be delineated and clearly marked in the field.
6. All proposed linear routes (i.e., roads and pipelines) will be reviewed and modified, if necessary, in the field to minimize impacts to the California tiger salamander with assistance by the on-site biologist or environmental monitor.
7. Personnel will limit their vehicle use to existing routes of travel. Travelling off designated roads will be prohibited unless access is determined critical for a particular activity and the route has been flagged to avoid or minimize adverse effects.
8. To minimize the potential for road mortality of California tiger salamander and their habitat, nighttime traffic will be minimized during the ground disturbing phase to the extent feasible; all hauling activities within habitat for covered wildlife will be restricted to daylight hours during the rainy season, defined as the hours after sunrise and before sunset.
9. Except in areas with posted speed limits greater than 10 miles-per-hour, project-related vehicle speeds will not exceed 10 miles-per-hour when driving within California tiger salamander habitat.
10. Prior to moving vehicles or equipment, personnel will look under the vehicles or equipment for the presence of California tiger salamanders. If a California tiger salamander or any other wildlife species is observed, the vehicle will not be moved until the animal has vacated the area on its own accord or has been relocated out of harm's way in accordance with Measure 12.
11. A Service-approved biologist will conduct pre-activity surveys of California tiger salamander habitat within project disturbance boundaries immediately prior to the onset of any ground disturbance associated with the project to determine if any California tiger salamander individuals are present, and to refine the final habitat mitigation acreages. The Service-approved biologist will monitor ground disturbing activities in the vicinity of habitats to be avoided. Upon completion of initial ground disturbance, the biologist or monitor will periodically (minimum twice per week) visit the project site throughout the ground disturbing period to ensure that impacts to the project site are in compliance with the permit. After periods of rain, a Service-approved biologist will conduct daily pre-

activity surveys to ensure no California tiger salamanders have migrated into the work area prior to ground disturbing activities resuming. No construction work will be initiated until a Service-approved biologist determines that the work area is clear of California tiger salamanders. Should any California tiger salamanders be observed within harm's way, the animal will be allowed to vacate the area on its own accord or be relocated in accordance with Measure 12.

12. Any California tiger salamander or individuals of other wildlife species will be allowed to vacate the project areas on its own accord under the observation of a Service-approved biologist. If any California tiger salamanders or individuals of other wildlife species does not relocate on their own, or if they are in harm's way, they will be relocated out of harm's way to nearby suitable habitat, similar to that in which it was found, and outside the project area. Only a Service-approved biologist will relocate California tiger salamanders. The biologists conducting relocation activities will follow the Declining Amphibian Task Force Fieldwork Code of Practice (https://www.fws.gov/southwest/es/NewMexico/documents/SP/Declining_Amphibian_Task_Force_Fieldwork_Code_of_Practice.pdf).

A Service-approved biologist will relocate any California tiger salamanders found within the project footprint to an active rodent burrow system located no more than 300 feet outside of the project area unless otherwise approved by the Service. The individuals will be handled with clean and wet hands. During relocation they will be placed in a clean, covered plastic container with a wet non-cellulose sponge. Captured individuals will be relocated immediately; individuals will not be stored for lengthy periods or in heated areas. The relocation container will be kept out of direct sunlight.

A Service-approved biologist will monitor relocated California tiger salamanders until they enter a burrow and are concealed underground or otherwise deemed safe in the relocation area by the biologist. Relocation areas will be identified by the Service-approved biologist based on the best suitable habitat available. The Service-approved biologist will document both the capture site and the relocation site by photographs and GPS positions. The California tiger salamander will be photographed and measured (Snout-Vent) for identification purposes prior to relocation. All documentation will be provided to the Service within 24 hours of relocation.

13. Rodent burrows within the project areas that overlap California tiger salamander habitat will be excavated by a Service-approved biologist using hand tools until it is certain that the burrows are unoccupied. In lieu of burrow excavation, steel plates or plywood may also be utilized to protect small mammal burrows from ground disturbance. Plates and plywood will be removed nightly and will be removed if work is scheduled to cease for consecutive days. Any individual California tiger salamanders that are encountered will be allowed to vacate the area on their own accord or be relocated out of harm's way in accordance with Measure 12.

14. Exclusionary silt fencing (or other suitable fence material) will be installed at the discretion of a Service-approved biologist to minimize the potential for California tiger salamanders to enter the worksite. Exclusionary fencing will be maintained for the duration of the project. If a California tiger salamander or other wildlife species is observed within an enclosed worksite, a portion of the fencing will be removed to allow the individual to vacate the area on its own. Alternatively, the animal may be relocated out of harm's way in accordance with Measure 12.
15. All construction and sediment control fencing will be inspected each work day during construction activities to ensure they are functioning properly.
16. Steep-walled excavations (e.g., trenches) that may act as pitfall traps will be inspected for wildlife at least once per day and immediately before backfilling. In lieu of daily inspections (weekends, etc.), exclusionary fencing, covers, ramps, or similar measures will be taken to prevent wildlife entrapment.
17. Open pipe segments will be capped or sealed with tape (or equivalent material) nightly, or otherwise stored at least three feet above ground. Should a pipe segment become occupied by a California tiger salamander or any other wildlife species, the animal will be allowed to vacate the pipe on its own or will be removed and relocated in accordance with Measure 12. If the animal is in danger of injury or mortality, the pipe may be moved once to get it out of harm's way so the animal can then vacate on its own terms.
18. If covered activities must occur during the rainy season, permittees will not work during rain events, 48 hours prior to significant rain events (>0.5 inch), or during the 48 hours after these events, to the extent practicable. If work must occur 48 hours prior to significant rain events (>0.5 inch), or during the 48 hours after these events, a Service-approved biologist will conduct a pre-activity survey to ensure that the work area is clear (refer to Measure 10 above).
19. The applicant will ensure that all staging areas, equipment storage areas, stockpile sites, and refueling areas are located at least 100 feet from surface water bodies and wetland habitats to minimize the potential for releases into surface water or wetland habitat. In lieu of the 100-foot buffer, secondary containment measures may be employed to prevent contamination of soil and water.
20. When working in areas with a predominance of native plants, the upper layer of topsoil material (6 inches) will be segregated during excavations to preserve the seed bank. The preserved topsoil will be covered to protect it from erosion and invasion of non-native plants until completion of the activity, when the topsoil will be replaced in the affected area. Existing access roads are not subject to this measure.
21. Disturbed areas will be restored and stabilized to reflect pre-existing contours and gradients to the extent practicable. Erosion and sediment controls (e.g., silt fences, fiber rolls, sandbags) will be installed, where necessary, utilizing weed-free materials in areas with a predominance of native plants. Where necessary, restored areas will be maintained

and monitored, including weed removal (focused on noxious weeds and excluding non-native annual grasses). All planting and seeding will occur the first year after construction is complete, after the first significant rain event of the year (i.e., more than 0.25 inches of precipitation)

22. Upon locating California tiger salamander individuals that may be dead or injured as a result of project-related activities, notification will be made within 72 hours to the Service's Ventura Field Office at (805) 644-1766.

Measures to Mitigate Unavoidable Impacts

For projects that have unavoidable adverse impacts on the California tiger salamander and/or its habitats, mitigation is needed to compensate for impacts to these species. Mitigation would be undertaken in a strategic way such that it contributes to meeting the recovery criteria in the affected population. The amount of compensatory mitigation to offset a proposed project's impacts should be determined by assessing a project's level of impacts to California tiger salamanders and its habitat. Compensatory mitigation, in this plan, refers to actions that support the permanent conservation, management, and endowment of habitat to ensure conservation benefits for the California tiger salamander.

The strategy to recover the Santa Barbara County California tiger salamander focuses on alleviating the threat of habitat loss and fragmentation. The goal of the final Recovery Plan (Service 2016) is to reduce the threats to the Santa Barbara County California tiger salamander to ensure its long-term viability in the wild, and allow for its removal from the list of threatened and endangered species. Recovery of this species can be achieved by addressing the conservation of remaining aquatic and upland habitat that provides essential connectivity, reduces fragmentation, and sufficiently buffers against encroaching development. To recover the species, recovery criteria must be met in a sufficient number of metapopulation areas to support long-term viability of the Santa Barbara County California tiger salamander. The Service presently believes that the recovery criteria must be met in all six metapopulation areas for delisting to be warranted; further research and monitoring should clarify the exact number of metapopulations necessary.

Unavoidable impacts to the California tiger salamander or its habitat will be mitigated in accordance with the Conservation Strategy and Mitigation Guidance for the California tiger salamander (Service 2016). The Conservation Strategy and Mitigation Guidance provides guidance for assessing land use and project development impacts to the Santa Barbara County DPS of the California tiger salamander and identifies our preferred approaches to offset unavoidable impacts through compensatory mitigation. Compensatory mitigation can be provided by the project proponent by buying credits from a mitigation provider (mitigation bank) or by establishing a mitigation site that meets the Service's specification for approved mitigation (permittee-responsible mitigation).

In general, the Conservation Strategy and Mitigation Guidance (Service 2020) states that the value of the impacted habitat should be calculated using the methodology outlined in Searcy and Shaffer (2008), which incorporates the amount of California tiger salamander aquatic breeding habit and upland habitat covering the site to be impacted. The value of the land proposed for

mitigation habitat should also be calculated using the Searcy and Shaffer methodology. Typically, a mitigation ratio of 1:1 [as calculated in Searcy and Shaffer (2008)] will be required for impacts to California tiger salamanders and its habitat. In other words, the reproductive value of habitat proposed for mitigation should equal the calculated reproductive value of the impacted habitat.

Mitigation Bank

Applicants may purchase credits from an approved conservation bank commensurate with the required mitigation, to provide compensation for impacts to California tiger salamanders. Performance and success criteria for providing compensation for impacts to the California tiger salamander will be deemed to have been met upon purchase of such credits.

In order to determine how many credits an applicant must purchase, the applicant must calculate the loss of reproductive value that would result from their project. The Service has calculated the average reproductive value of one credit at approved conservation banks as a means to determine how many credits a project proponent must purchase to offset the loss in reproductive value resulting from a project. An applicant must purchase as many credits needed to reach a mitigation ratio of 1:1 for reproductive value. For example, if a credit at a conservation bank has a reproductive value of 100 and a project results in a reproductive loss of 200, that project proponent must purchase two credits from that bank to offset the loss in reproductive value. Project proponents that are proposing to purchase mitigation credits from a conservation bank should coordinate with the Service to ensure they are using the correct reproductive value of one credit from the conservation bank in which the project proponent proposes to purchase credits from.

Permittee-Responsible Mitigation

Applicants may acquire compensation land to satisfy compensation requirements for impacts to the California tiger salamander. Compensation land must be acquired prior to initiating ground-disturbing activities within the Planning Area. All compensation land must also have a recorded perpetual conservation easement, and financial assurances must be provided to ensure funding for the long-term management of the protected resources on the lands. The compensation land will conserve sufficient reproductive value, as addressed in the Conservation Strategy and Mitigation Guidance for the California tiger salamander (Service 2016), to offset the impacts to the California tiger salamander. As stated above, a mitigation ratio of 1:1 [as calculated in Searcy and Shaffer (2008)] will be required for impacts to California tiger salamanders and their habitat. In other words, the reproductive value of habitat proposed for mitigation should equal the calculated reproductive value of the impacted habitat. When potentially suitable compensation land is identified, the applicant will prepare and submit a report to the Service outlining the suitability of the land for compensatory purposes. Once the Service agrees to the suitability of the compensatory land and the land is placed into conserved status, and financial assurances have been arranged, the performance and success criteria for the provision of onsite compensation lands will be deemed to have been met.

In general, large sites functionally connected to other permanently conserved lands are essential for conservation as they would likely contribute the greatest toward meeting recovery criteria. Within each metapopulation, areas prioritized for conservation should be directed to areas encompassing known breeding ponds and their associated upland habitat that contribute in the greatest extent to meeting the aforementioned recovery criteria. Areas sought for conservation should be steered away from ponds that are isolated from other ponds in a metapopulation area and/or that do not have sufficient functional upland habitat to support long-term viability of a metapopulation. Conservation areas should aim to protect and manage sufficient habitat to support long-term viability of the Santa Barbara County DPS of the California tiger salamander in each metapopulation. These areas should be located within areas that are capable of supporting a minimum viable population of California tiger salamanders. Applicants pursuing onsite or offsite mitigation should work with the Service to ensure proposed mitigation contributes to recovery of the species.

For permittee-responsible onsite or offsite mitigation, all compensation land must be protected under a perpetual Conservation Easement and be recorded prior to the onset of ground-disturbing activities. The Conservation Easement must be held by a third-party that is qualified and approved by the Service to hold and enforce the terms of the Conservation Easement. Applicants will also provide for the long-term monitoring and management of the compensation lands by funding long-term financial assurances in the form of an endowment. Applicants must develop a management plan for mitigation lands to be included in a Conservation Easement. The management plan provides for: 1) annual easement inspections, which will generate up-to-date information on the Easement Area’s overall condition and biological resources; 2) periodic biological monitoring, which will generate detailed data describing onsite species: including population abundance, condition of habitat and condition of related human infrastructure, particularly water impoundment structures; 3) management, maintenance and enhancement tasks, which will ensure the sustainability of these resources and the health of the species’ habitat; and 4) annual reports, which will summarize maintenance and management activities undertaken during the previous year, and provide an opportunity to creatively consider future needs and adaptive responses.

The following table shows a summary of minimization and mitigation measures and corresponding biological goals and objectives resulting from threats associated with the covered activities.

Covered Activity	Type of Impact	Avoidance, Minimization, & Mitigation Measures	Biological Goals and Objectives met
Ground Disturbance	Injury or mortality	Surveys and relocation; Protective fencing; Personnel education; Minimizing impacts to natural areas; Habitat restoration to disturbed areas; Compensatory mitigation	Goal 1 Objectives 1.1, 1.2, 1.3, and 1.4 Goal 2

LOS ALAMOS CONSERVATION PLAN FOR CULTIVATION ACTIVITIES

			Objectives 2.1 and 2.2 Goal 3 Objective 3.1
Driving on Roads	Injury or mortality	Surveys and relocation; Personnel education;	Goal 1 Objectives 1.1 and 1.2
Human Presence	Injury or mortality	Surveys and relocation; Personnel education; Minimizing impacts to natural areas	Goal 1 Objectives 1.1, 1.2, and 1.3
Vegetation Removal	Injury or mortality	Surveys and relocation; Protective fencing; Personnel education; Minimizing impacts to natural areas; Habitat restoration to disturbed areas; Compensatory mitigation	Goal 1 Objectives 1.1, 1.2, 1.3, and 1.4 Goal 2 Objectives 2.1 and 2.2 Goal 3 Objective 3.1
Loss of Upland Habitat	Harm, injury or mortality	Compensatory mitigation; Restore disturbed areas	Goal 1 Objective 1.4 Goal 2 Objective 2.1 and 2.2 Goal 3 Objective 3.1
Capture/Relocation	Injury or mortality	Species surveys and relocation will be performed by a Service-approved Biologist	Goal 1 Objectives 1.1 and 1.2
Barrier to Movement	Harm, injury or mortality	Minimize impacts to natural resources; Compensatory mitigation	Goal 1 Objectives 1.1, 1.2, and 1.3 Goal 3 Objective 3.1

Onsite Restoration	N/A	Surveys and relocation; Protective fencing; Personnel education; Restore disturbed areas	Goal 1 Objective 1.1, 1.2, and 1.4 Goal 2 Objective 2.1, 2.2, and 2.3
Offsite Mitigation	Beneficial Impact	N/A	Goal 3 Objective 3.1

Monitoring

Monitoring tracks compliance with the terms and conditions of the Plan and incidental take permit. There are three types of monitoring: (1) compliance monitoring tracks the permit holder’s compliance with the requirements specified in the Plan, Implementing Agreement, and permit; (2) effects monitoring tracks the impacts of the covered activities on the California tiger salamander; and (3) effectiveness monitoring tracks the progress of the conservation strategy in meeting the HCP’s biological goals and objectives (includes species surveys, reproductive success, etc.). Monitoring provides information for making adaptive management decisions.

Compliance Monitoring

Compliance monitoring will be implemented via onsite construction monitoring, daily monitoring logs, and preparation of a post-construction compliance report.

Effects Monitoring

To quantify the incidental take at the end of the project, a biologist will measure the disturbance footprint (with sub-meter GPS) and count the number of individual California tiger salamanders that were found and translocated, or injured or killed during construction.

Effectiveness Monitoring

The effectiveness of the conservation strategy will be determined during monitoring of initial ground-disturbing activities and periodic follow-up visits for onsite construction monitoring and daily monitoring logs. The post-construction compliance report will include an evaluation of the effectiveness of the Avoidance, Minimization, and Mitigation Measures. Permittees are responsible for management, monitoring, and reporting the biological monitoring on mitigation land for which the Permittee is responsible. Management, monitoring, and reporting the biological monitoring on Conservation Banks or other mitigation land is the responsibility of the banker or third party that holds the easement on the mitigation land, respectively. Other than the biological monitoring that is being conducted on the mitigation land, the Service will monitor and evaluate biological effectiveness of the Plan through review of annual reports and subsequent surveys for listed species. Permittees will allow Service staff, or other persons designated by the Service, to access the property at any reasonable hour for the purpose of monitoring California tiger salamander populations or trapping California tiger salamanders (50

CFR 13.47). Permittees will monitor restoration on project sites with temporary impacts to ensure that restoration goals are achieved. Results will be included in annual reports and restoration reports as described in the Reporting section of this document.

Adaptive Management Strategy

Service policy (65 CFR 35242) defines adaptive management as a formal, structured approach for addressing the uncertainty inherent in all-natural systems. It involves examining alternative strategies for meeting measurable biological goals and objectives, and then, if necessary, adjusting future conservation, management, monitoring, or mitigation actions based upon what is learned. Adaptive management plans are required for conservation plans where there is substantial uncertainty regarding the effects of the action on the California tiger salamander or the efficacy of minimization and mitigation measures. The adaptive management program identifies the potential need for modification of a project and uses research and monitoring as an on-going feedback loop for continuous improvement. It should also identify triggers for certain responses and incorporate those triggers and responses into conservation plan implementation. Monitoring and reporting described in Section 5 of this plan as well as other project and survey information will provide the basis for determining when adaptive management strategies should be discussed and/or implemented. Minimization and mitigation actions prescribed in this conservation plan will be monitored and analyzed to determine whether they are producing the anticipated results. If the desired results are not being achieved, adjustments based on monitoring and the analysis of monitoring results can be made to increase the conservation plan's implementation effectiveness.

The conservation strategy described in this conservation plan is intended to minimize and mitigate for impacts to the California tiger salamander resulting from Covered Activities. The process of adaptive management is integral to ensuring that the biological goals and objectives specified in the conservation strategy are achieved. The adaptive management strategy for this Plan involves new or refined management techniques to respond to new information about distribution of California tiger salamanders in the Plan Area as well as identifies adjustments to the conservation program that could be implemented as new information or data is obtained. The adaptive management strategy opens reassessment of an adopted strategy and identifies a specific threshold(s) that triggers implementation of a particular adaptive management strategy.

Biological Goal 1 and Biological Goal 2 is to avoid and minimize take and related disturbance to the California tiger salamander and its habitats within the project areas and to preserve, maintain, and restore occupied and suitable aquatic and upland habitat, respectively, for the species in the Planning Area. Measures to avoid, minimize, and offset project impacts to California tiger salamander are described above under *Measures to Avoid and Minimize Impacts*. Modification or augmentation of these measures (such as newly developed methods to protect California tiger salamanders) may be necessary to ensure maximum protection of the species. To that end, applicants will monitor the efficacy of the avoidance, minimization, and mitigation measures and will quantify the actual extent of project impacts in annual reports. The review of mitigation measure effectiveness will be done by the Service at least once per year or as determined to be necessary. Annual reports will be submitted to Service for review in order to determine the quantification of actual take and assessment of avoidance and minimization effectiveness.

Biological Goal 3 is to provide compensatory mitigation to further meet recovery criteria and support long-term viability of the California tiger salamander. While compensatory mitigation for permit issued under this Plan will be completed in one step (i.e., purchasing credits from a conservation bank or establishment of a conservation easement) and prior to the onset of project impacts, it is important to ensure that the mitigation is helping to meet recovery criteria and support the long-term viability of the Santa Barbara County DPS of the California tiger salamander.

Compensatory mitigation for the California tiger salamander focuses on protection and enhancement of habitat by purchasing credits from a Service-approved conservation bank or by establishing a conservation easement that meets the Service's specification for approved mitigation. Service-approved banks and conservation easements are required to have an approved management plan that describes annual surveys and monitoring that include quantitative measurements to determine whether management goals and objectives are being met. These monitoring efforts will be used to determine if the biological goals and objectives of this plan are being met. If desired results are not being achieved, adjustments can be made to increase the conservation plan's implementation effectiveness. For this Plan, adaptive management actions may be necessary to ensure the conservation program is supporting recovery of the Santa Barbara County DPS of the California tiger salamander.

For purposes of this Plan, the Service identifies specific thresholds that trigger implementation of a particular adaptive management strategy or open reassessment of an adopted strategy for the California tiger salamander. We developed these triggers based on the species' biology and goals set forth in the Recovery Plan (Service 2016). Each applicant must include a line item in the funding section of a project's individual project plan for adaptive management. Prior to approval of each individual permit package (see Section 7), there must be a clear understanding and agreement between the Service and the applicant as to what the funds are intended for and what thresholds would trigger collection of the adaptive management funds. The Service anticipates that the line item will be approximately 10 percent of the overall cost of the mitigation. This process will enable the applicant to assess the potential economic impacts of adjustments before agreeing to the Plan.

California Tiger Salamander Adaptive Management

Adaptive management actions will be implemented for the California tiger salamander if less than the required number of known breeding ponds required to meet recovery criteria in a metapopulation either: (1) do not have documented breeding for a period of five or more years or, (2) fewer than ten larvae are captured during surveys for a period of five or more years, or (3) any combination of these scenarios. For example, if, over a 5-year survey period, 9 California tiger salamander metamorphs are captured during aquatic surveys in year 3, and no California tiger salamanders are caught in years 1, 2, 4, and 5, adaptive management actions would be implemented. Results from annual range-wide surveys, project surveys and other information would be used to inform the Service when implementation of adaptive management actions is warranted. The number of known breeding ponds required to meet recovery criteria is shown in the table below.

A 5-year period is significant because California tiger salamander metamorphs require 4 to 5 years before they reach sexual maturity (Trenham et al. 2000). Less than 50 percent of first-time breeding California tiger salamanders typically survive to breed more than once (Trenham et al. 2000). Therefore, we assume that the entire reproductive output of individual California tiger salamanders could be affected over a 5-year period. If the entire reproductive output of an individual California tiger salamander is affected, the same is assumed to be true for an entire metapopulation area or range of the species.

The Service should be consulted with prior to implementation of adaptive management actions should the aforementioned triggers be met. Adaptive management actions that should be considered include, but are not limited to:

Adaptive Management Action	Description
Breeding Pond Construction	A hydrologist should conduct a thorough analysis to determine where suitable soils and other aspects necessary to ensure pond success. Proposed pond locations should be within 2,200 feet of existing known California tiger salamander breeding ponds. Pond success will be measured by its ability to maintain water for at least 12 weeks.
Breeding Pond Enhancement	Human-made water features and natural pools may be enhanced by adding water to them to ensure that they hold water for a longer period of time (at least 12 weeks for California tiger salamander metamorphosis to occur). If a human-made water feature or natural pools have some water present, additional water should be added slowly to existing ponds to minimize turbidity.
Noxious Species Removal	Non-native fish (e.g., mosquitofish, bass, sunfish, goldfish), bullfrogs, crayfish, non-native tiger salamanders, and exotic aquatic turtles should be removed from any water body within the geographic range of the California tiger salamander in Santa Barbara County. Noxious weeds that are invading breeding pools will be removed and managed according to the accepted standards of the Service and recommendations of a Service-approved biologist.
Livestock Grazing	Manage grazing to maintain the desired amount of emergent vegetation in ponds and vernal pools, and to keep annual grassland generally short (Ford et al. 2013). Don't

	exclude grazing from extensive areas of grassland for more than one year.
Habitat Restoration	Restoration of breeding and upland habitat can help to achieve proper functioning features that may support a stable and well-distributed population. Such activities include, but are not limited to, voluntary replacement of crops with native grassland or scrub (see Wang et al. 2009) and instituting low-intensity grazing or mowing in lieu of ground-disturbing activities such as tilling, deep ripping, or grading. If a breeding pond was historically ephemeral but converted through human-caused activities to become perennial, the breeding pond should be restored back to ephemeral to the extent feasible.
Headstarting Program	A headstarting program can be used to help bolster local populations of California tiger salamanders. A headstarting program can help to reduce the mortality of California tiger salamander larvae while still providing all of the necessary factors for their proper development.
Threat Reduction	A number of management actions that could reduce threats include, but are not limited to: use of fencing (e.g., fencing roads), restrict the use of pesticides and herbicides, ensure proper water quality (e.g., dissolved oxygen, nitrate), etc.

Changed Circumstances

Regulations implementing Section 10 of the Act, 50 CFR 17.22(b)(2) and 17.32(b)(2), require that a habitat conservation plan specify the procedures to be used for dealing with changed and unforeseen circumstances that may arise during the implementation of the habitat conservation plan. In addition, 50 CFR 17.22 (b)(5) and 17.32 (b)(5) (No Surprises Rule) describes the obligations of the permittee and the Service. The purpose of the No Surprises Rule is to provide assurance to the non-federal landowners participating in habitat conservation planning under the Act that no additional land restrictions or financial compensation will be required for species adequately covered by a properly implemented habitat conservation plan, in light of unforeseen circumstances, without the consent of the permittee.

If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and these additional measures were already provided for in the plan’s operating conservation program, then those measures will be implemented as specified in the plan.

However, if additional conservation management and mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the plan's operating conservation program, the Service will not require these additional measures absent the consent of the applicant, provided that the Plan is being "properly implemented" (properly implemented means the commitments and the provisions of the Plan and the Conservation Easement document have been or are fully implemented).

Applicants should identify up-front the range of possible operating conservation program adjustments that could be implemented as new information or data is obtained. This range defines the limits of what resource commitments may be required of the applicant. The applicant should identify specific actions that must be taken, not merely provide a general review of strategies. Prior to permit issuance, there must be a clear understanding and agreement between the Service and the applicant as to the range of adjustments to the management actions that might be required as a result of any changed or unforeseen circumstances. This process will enable the applicant to assess the potential economic impacts of adjustments before agreeing to the Plan.

To fund the remedial management to address changed circumstances, applicants must add a line item to the estimated management costs. The amount should be commensurate with the costs to address the changed circumstances, based on the anticipated restoration, management and/or monitoring costs. The following sections outline reasonably-foreseeable circumstances and their anticipated effects on the California tiger salamander.

Newly Listed Species

If a new species is listed or critical habitat is designated under the Act and could be taken by Covered Activities, any incidental take permits issued under this plan will be reevaluated by the Service. If, after reevaluation, the Service determines that modification of Covered Activities for any specific project would be necessary to avoid or minimize the likelihood of take of this newly listed species, then the permittee and the Service will work together to develop and implement mutually agreeable measures to the Covered Activities in the incidental take permit ("Modification Measure(s)"). Each Modification Measure must be approved by the Service and the permittee before implementation. The permittee will be allowed to continue undertaking Covered Activities that would not result in take of the newly listed species while such Modification Measures are being developed. The permittee, or their legal successor(s) in ownership, will continue to implement such Modification Measures until such time as the permittee has applied for and the Service has approved an amendment of the Section 10(a)(1)(B) permit, in accordance with applicable statutory and regulatory requirements, to cover the newly listed species or until the Service notifies the permittee in writing that the Modification Measures to the Covered Activities are no longer required to avoid the take of the newly listed species and/or impacting any newly designated critical habitat.

Newly Discovered Listed Species

In the event that an already listed species is discovered in a project area, and, after evaluation of this already listed species, the Service determines that modification of the Covered Activities would be necessary to avoid or minimize the likelihood of take of this already listed species, then

the permittee and the Service will work together to develop and implement mutually agreeable Modification Measures to the Covered Activities in the incidental take permit. Each Modification Measure must be approved by the Service and the permittee before implementation. The permittee will be allowed to continue undertaking Covered Activities that would not result in take of the newly listed species while such Modification Measures are being developed. The permittee, or their legal successor(s) in ownership, will continue to implement such Modification Measures until such time as the permittee has applied for and the Service has approved an amendment of the Section 10(a)(1)(B) permit, in accordance with applicable statutory and regulatory requirements, to cover the listed species or until the Service notifies the permittee in writing that the Modification Measures to the Covered Activities are no longer required to avoid the likelihood of take of the listed species.

Fire

Fire is a component of the natural disturbance regime in the Planning Area. While the California tiger salamander exhibit many important adaptations to fire and/or the habitat conditions it creates, fire can have detrimental effects on the populations, particularly if the fire occurs outside of the range of natural variation of the disturbance regime (e.g., inappropriate season, intensity, severity, or frequency), or if it promotes the invasion and spread of invasive plants. Fire may negatively impact California tiger salamander populations by causing soil erosion, which can preclude native plant re-establishment, and by promoting the invasion and spread of exotic plant species.

The effects of wildfire on watersheds include first-order impacts, such as burned vegetation and reduced soil infiltration, and second order impacts, such as increased runoff, hillslope erosion, stream sedimentation, and significant alteration of terrestrial and aquatic habitat. Increased erosion and flooding emanating from burned areas not only impacts rates of sediment delivery and transport but also the structure and function of streams downslope and downstream. Greater flow and increased sediment loading can produce episodes of exceptionally high rates of sediment transport (Ryan et al. 2010). Increased erosion and sediment delivery could also cause a decrease in the holding capacity of the vernal pools that function as breeding habitat for California tiger salamanders.

If a wildfire occurs within a project area, the permittee will notify the Service of this changed circumstance, and then implement the following actions:

- Assess the damage caused by the fire, including the areal extent of natural communities and California tiger salamander habitat affected;
- Develop and implement an exotic plant early detection and rapid response plan, to prevent the affected area from becoming dominated by invasive plants;
- Develop and implement a monitoring program to evaluate recovery of the affected area for five years; and
- If monitoring indicates that native plant re-establishment is insufficient, or that the indirect effects of fire including erosion and the invasion and spread of exotic plants, are degrading habitat in ways that impacts the California tiger salamander, develop and

implement a restoration plan designed to improve habitat conditions, through an adaptive management and monitoring program.

Drought

Climate variability, such as fluctuations between wet and dry periods, is part of natural processes; however, climatic models suggest that much of the recent trends in climate are driven by anthropogenic causes, and models indicate that these trends are likely to continue into the future (Barnett et al. 2008). Current climate change predictions for terrestrial areas in the Northern Hemisphere indicate warmer air temperatures, more intense precipitation events, and increased summer continental drying (Field et al. 1999, Cayan et al. 2005, Intergovernmental Panel on Climate Change 2014). Climate simulations have shown that, by 2100, California temperatures are likely to increase by 2.7 degrees Fahrenheit (1.5 degrees Celsius) under a lower emissions scenario, and by up to 8.1 degrees Fahrenheit (4.5 degrees Celsius) under a higher emissions scenario (Cayan et al. 2008). Because of the diversity of California's landscape, however, we do not know what effect (e.g., changes in precipitation, number and severity of storm events) increasing temperatures will have at the local level.

Global amphibian declines have been increasingly attributed to factors resulting from global climate change over the last decade (Corn 2005, Wake 2007, Reaser and Blaustein 2005). Factors such as epidemic disease (Pounds et al. 2006), changes in breeding phenology (Terhivuo 1988; Gibbs and Breisch 2001; Beebee 1995), changes in environmental conditions such as leaf litter (Whitfield et al. 2007), increased evaporation rate (Corn 2005, but see Pyke and Marty 2005), increased frequency of storm events and drought (Kagarise-Sherman and Morton 1993) and ultraviolet radiation (Blaustein et al. 1998) have been linked to climate change and declines in amphibian populations.

Diseases, such as the amphibian chytrid fungus, may become more virulent in changing climatic conditions (Pounds et al. 2006). Chytrid fungus is a water-borne fungus that can be spread through direct contact between aquatic animals and by a spore that can move short distances through the water. The fungus can decimate amphibian populations, causing fungal dermatitis, which usually results in death in 1 to 2 weeks. Infected animals may spread the fungal spores to other ponds and streams before they die. Once a pond has become infected with chytrid fungus, the fungus stays in the water for an undetermined amount of time. If drought causes the amphibian chytrid fungus to become more virulent, California tiger salamanders could be impacted.

Changes to the hydroperiod of ephemeral ponds due to changing weather patterns have significant implications for the diversity of amphibians that rely on those ponds for breeding (Corn 2005). California tiger salamanders may also be adversely affected by drought conditions if the hydroperiods of ephemeral ponds that these species use as breeding habitat is limited to a point where the ponds do not retain water long enough for successful breeding to occur. Ultraviolet radiation has been shown to have negative effects on amphibian eggs and embryos around the world (Blaustein et al. 1998). The precise effects that climate change will have on the the California tiger salamander is unknown. Drought is a natural part of the climatic variability of the ecoregion; however, drought may be exacerbated by climate change.

For purposes of this Plan, a drought is defined as two or more consecutive years with rainfall below 75 percent of average. Over the 62-year period of record for which daily rainfall was measured at weather stations in Lompoc City Hall (Santa Barbara County 2017), 27 years had precipitation under 75 percent average rainfall; however, two or more consecutive dry years occurred just seven times in Lompoc: 1959 – 1961, 1970 – 1972, 1976 – 1977, 1981 – 1982, 1984 – 1985, 1989 – 1990, and 2012 – 2016.

Recognizing that climate change may increase the frequency of drought, for purposes of the Plan, drought is defined as a changed circumstance if it occurs more than four times during the 20-year permit term, or if a single drought extends up to four years in duration.

In the event that a drought during the permit term negatively impacts the California tiger salamander or efforts to promote their persistence as part of the conservation strategy, the permittees will prepare a report assessing the impacts and identify strategies to ameliorate or repair them. The report will be provided to the Service for review and comment and the permittee will implement the remedial measures identified in the report or as recommended by Service.

Exotic Species

Habitat within the Planning Area has been degraded by a suite of invasive species not native to the area. These species include both invasive plants and aquatic species. Exotic species can have strong, negative impacts on the California tiger salamander and its habitats through a variety of direct and indirect mechanisms, including competition for resources, predation, habitat degradation, and promotion of fire.

Larval and adult individuals of the non-native tiger salamander (*Ambystoma tigrinum mavortium*) were widely sold as fish bait in California during the past century, and a number of populations of the species have become established in the state, some within the range of the California tiger salamander. Non-native tiger salamanders can have negative effects on California tiger salamander populations through hybridization, resulting in loss of genetically-pure native salamanders (Shaffer et al. 1993, Riley et al. 2003). Non-native tiger salamanders are present at the Lompoc Federal Penitentiary grounds in Santa Barbara County (outside of but near the Santa Barbara County California tiger salamander's range), and a hybrid was discovered at a site in the Purisima Hills metapopulation area in 2009, which is the closest metapopulation to the penitentiary. The potential loss of any metapopulation of the Santa Barbara County DPS of the California tiger salamander to hybridization is a serious threat.

In this Plan, the detection of new invasive aquatic species within suitable California tiger salamander aquatic habitat within an individual project area is considered a changed circumstance for which remedial actions will be implemented. The permittee will conduct an assessment and develop a plan to control and to the extent possible, eradicate, the hybridized individuals and, if necessary, remediate the impacts caused to the California tiger salamander and its habitat.

Unforeseen Circumstances

Unforeseen circumstances are defined at 50 CFR 17.3 as changes in circumstances affecting a species or geographic area covered by a conservation plan that could not reasonably have been anticipated by plan developers and the Service at the time of the conservation plan's negotiation and development, and that result in a substantial and adverse change in status of the Santa Barbara County DTS of the California tiger salamander (50 CRF 17.3). The term "Unforeseen Circumstances" is used to define the limit of the applicant's obligation under the "No Surprises" regulations set forth in 50 CFR, Sections 17.22 (b)(5) and 17.32 (b)(5).

In case of an unforeseen circumstance, the Permittee will immediately notify the Service. In deciding whether Unforeseen Circumstances exist, which might warrant requiring additional conservation measures, the Service will consider, but not be limited to, the factors identified in 50 CFR, 17.22(b)(5)(C) and 17.32(b)(5)(C) (the No Surprises Rule), which are: size of the current range of the affected species, percentage of range affected by the Plan, percentage of range conserved by the Plan, ecological significance of that portion of the range affected by the Plan, level of knowledge about the affected species and the degree of specificity of the species' conservation program under the Plan, and whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild.

As described in 50 C.F.R., Sections 17.22(b)(5)(C) and 17.32(b)(5)(C), the Service will have the burden of demonstrating that Unforeseen Circumstances exist, using the best data available. Any findings of Unforeseen Circumstances must be clearly documented and based upon reliable technical information regarding the biological status and habitat requirements of the affected species

Except where substantial threat of imminent, significant adverse impacts to California tiger salamander exists, the Service will provide the Permittee at least sixty (60) calendar-days written notice of a proposed finding of Unforeseen Circumstances, during which time the Service will meet with the Permittee to discuss the proposed finding, to provide the Permittee with an opportunity to submit information to rebut the proposed finding, and to consider any proposed changes to the conservation program or the incidental take permit.

Pursuant to the No Surprises rule, if the Service determines that additional conservation and mitigation measures are necessary to respond to the Unforeseen Circumstances, the additional measures must be as close as possible to the terms of the original Plan. If the Service determines that additional conservation and mitigation measures are necessary to respond to Unforeseen Circumstances, then the Permittee will work with the Service to develop mutually agreeable conservation and mitigation measures, each of which must be approved by the Service and the Permittee before implementation. Additional conservation and mitigation measures will not involve the commitment of additional land, additional financial commitment or funding by the Permittee, additional restrictions on the use of a project's area or covered activities, or the commitment of other natural resources otherwise available for development or use under original terms of the Plan without the consent of the Permittee.

Reporting

By June 30 following each year of permit issuance and project implementation, permittees will submit a report to the Ventura Fish and Wildlife Office to document the status of the project. The reports will be sent to the Ventura Fish and Wildlife Office by email at sbc-cultivationgcp@fws.gov. Annual reports to the Service will include the following information:

1. Brief summary or list of project activities accomplished during the reporting year (e.g. this includes development/construction activities, and other covered activities);
2. Project impacts (e.g. number of acres graded, number of buildings constructed, etc.);
3. Description of any take of California tiger salamander and/or its habitats (includes cause of take, form of take, take amount, location of take and time of day, and deposition of dead or injured individuals) that occurred;
4. Brief description of conservation strategy implemented;
5. Monitoring results (compliance, effects, and effectiveness monitoring) and survey information (if applicable);
6. Description of circumstances that made adaptive management necessary and how it was implemented, including a table showing the cumulative totals; by reporting period all adaptive management changes to the Plan, including a very brief summary of the actions;
7. Description of any changed or unforeseen circumstances that occurred and how they were dealt with;
8. Funding expenditures, balance, and accrual of actions related to implementation of minimization and mitigation measures;
9. Description of any minor or major amendments; and
10. Description of any surveys that were conducted for California tiger salamander and its habitat.

Once an applicant completes activities covered by a permit, the applicant will notify the Ventura Fish and Wildlife Office that they have completed all covered activities and mitigation measures and provide a final report to the Ventura Fish and Wildlife Office; subsequent annual compliance reports will not be necessary thereafter.

Section 6 Funding

Section 10(a)(2)(A)(ii) of the Act requires that funding will be available to implement actions that will be enacted to minimize and mitigate the impacts of the taking must be specified. The Act also requires that the Service must find that “the applicant will ensure that adequate funding for the plan will be provided” (Section 10(a)(2)(B)(iii)). Applicants must therefore demonstrate adequate funding sources to fully implement the actions described in this Plan and their Individual Project Package. Expenses related to these activities are the sole responsibility of the Permittee. Failure to commit appropriate funding prior to approval are grounds for denial. If funding obligations are not met after the Permit is issued, the Service may revoke or suspend an existing Permit, and will weigh in any decision to issue a Permit to Permittee for any future project. Permittees unable to meet the financial requirements described here may not meet qualifications for approval of Individual Project Packages and should contact the Service for additional guidance or potential approval of alternative funding mechanisms.

Applicants must ensure that adequate funding sources for implementation, actions to be taken for changed circumstances and unforeseen events, alternatives to the proposed project, and other measures are included in their Individual Permit Package. Funding for mitigation obligations are directly related to the mitigation option(s) selected by the applicant. If a Permittee chooses to fulfill mitigation requirements through the purchase of credits from a Service-approved conservation bank, the conservation bank will be responsible for the management of the mitigation lands secured through the purchase of bank credits. If a Permittee elects to fulfill mitigation obligations through Permittee-responsible all management responsibilities, including adaptive management procedures associated with those lands, must be fully funded and managed by the Permittee or designated third party entity.

Section 7 Permit Processing and Implementation

Permit Application Package

To apply for a Permit under the Plan, project proponents must submit a complete Permit Application Package. This section describes the Permit Application Package and provides information on the development and submission of the package. The Permit Application Package includes the following items:

- A 3-200-56 Federal Fish and Wildlife Permit Application Form (including supplementary information requested in the Permit application form: total number of acres, covered activities requested under the Permit, etc.);
- Application processing fee of \$100;
- A copy of the Plan Eligibility Determination document:
 - Project proponents interested in applying for a Permit must complete the Eligibility Determination document. This document can assist potential applicants with determining whether their project, or projects, may be eligible for a Permit under this Plan. If a proposed project is determined to not be eligible to participate through the Plan, the Eligibility Determination document provides recommendations intended to assist project proponents to identify alternate processes that can help them achieve compliance with the Act. If project proponents determine that their project, or projects, may be eligible for coverage, they may seek Permit issuance through the application process.
- Individual Project Package, which includes:
 - Map and description of the location of impacts, including photographs (as described below);
 - Duration of proposed Covered Activities;
 - Description of proposed Covered Activities;
 - Survey results for the California tiger salamander in accordance with the Service's survey protocol (Service and Department 2003) or notification that the presence of the species will be assumed based on habitat;
 - Species assessment and estimation of take (more information below);
 - List of minimization measures appropriate for the project;
 - Proposed mitigation and associated calculations; and
 - Funding assurances and commitment necessary to implement the proposed minimization and mitigation measures (more information below).
 - If conservation banks are the selected mitigation method, documentation of credit purchase must be provided to the Service prior to the onset of any activities that have the potential to result in take of California tiger

salamander. If Permittee-responsible mitigation is the selected mitigation method, these lands must be acquired, have established endowments and completed management plans, and be approved by the Service prior to any impacts that may result in take of California tiger salamander.

Applicants with newly-constructed projects covered by the Plan may include both construction and operation and maintenance activities within the same Permit Application Package or may submit one Individual Project Package for construction and one for operation and maintenance activities. Applicants with existing projects prior to the Plan may submit Permit Application Package for their ongoing operation and maintenance activities. The Service recognizes that it may not be feasible to submit a Permit Application Package for each individual operation and maintenance activity proposed within the Planning Area. Therefore, Permittees may group these activities for multiple projects into one Permit Application Package. Permit Application Package for operation and maintenance activities must include a general description of types of activities, estimations of typical size and frequency of operation and maintenance activities based on past activities, and typical impact type associated with activities. Operation and maintenance applications should provide as much information as possible for the Service to adequately evaluate proposed potential project(s). Mitigation completion for operation and maintenance must be documented in the Individual Project Package and be in place prior to impacts, unless it is an emergency repair.

Description of Project Area and Map

Permittees must submit maps and a description of the project area. Maps should include a large scale map with context of the project within the surrounding area, a small scale map specific to the project area. Additionally, maps should delineate areas with anticipated temporary and permanent impacts.

Projects that include temporary impacts must submit color digital images taken prior to impacts, the date the photograph was taken, and the location of established photograph points (latitude and longitude recorded in NAD83). Photographs must be taken in the four cardinal directions (North, South, East, and West) at the established photograph points. For non-linear projects, such as well pads and associated surface facilities, photograph point locations must include, at a minimum, all four corners of the project site. For linear projects, such as pipelines and electric distribution lines, photograph point locations must include, at a minimum, points every 0.25 mile along the project route. These photographs will be used to demonstrate vegetation establishment following impacts.

Estimating the Amount of Take for the California Tiger Salamander

Take of California tiger salamanders would be in the form of harm, capture, injury, and/or mortality. Take for each permit issued under the Plan will be determined by the amount of the impacted habitat. The Service will work with each Permittee to determine the amount of mitigation required to offset the impacts of incidental taking resulting from Covered Activities. The amount of mitigation required to offset the impacts will be calculated in accordance with the California Tiger Salamander Conservation Strategy (Service 2020) and is further described in

Section 5 of this plan under *Measures to Mitigate Unavoidable Impacts*. Before the Service can approve a Permit Application Package, assurances of adequate mitigation must be provided. The Service will calculate the potential amount of mitigation needed prior to Permit Application Package approval.

Mitigation Assurances

Permittees must demonstrate adequate funding for mitigation. If conservation banks are the selected mitigation method, documentation of credit purchase must be provided to the Service prior to initiation of impacts. If Permittee-responsible mitigation lands are the selected mitigation method, these lands must be acquired, have completed management plans and perpetual protection (for example, a conservation easement), and be approved by the Service prior to the initiation of impacts. Applicants must submit their plans for mitigation (type, location, and status) in their Individual Project Packages.

Funding Assurances

In addition to mitigation funding, applicants must also demonstrate adequate funding sources to fully implement the Plan, complete and maintain required minimization and mitigation measures, conduct compliance and effectiveness monitoring, and implement measures that may be required due to changed circumstances. Funding options for changed circumstances and post-construction restoration are described in Section 6. For each Permit Application Package, applicants must identify the selected funding option, submit applicable documentation of the selected funding assurance (as discussed in Section 6), and include an estimation of the cost to implement the Plan.

Service Review and Notification of Permit Application Package Approval or Denial

Following the receipt of a complete Permit Application Package, the Service will review the package for potential approval. The Service will notify applicants via e-mail (to the e-mail address included in the Individual Project Package Checklist) if and when their Permit Application Package is approved. The Service will also correspond via e-mail if the Permit Application Package is incomplete or has been denied for any reason within 30 days of receipt of Permit Application Package. The Service will provide the applicant with an explanation of why the Permit Application Package was deemed incomplete or not approved.

The number of acres to be covered by a permit for the specific project will be estimated in accordance with the activities proposed on their individual project site. Applicants that seek a permit for a specific project are eligible to seek further permits in the future. That is, if an applicant requests a permit for proposed activities and may need further coverage in the future, they can reapply for additional take coverage for future projects. The Service will track the amount of take permitted for each project under the Plan through the approval of incidental take permits (approval process described below). If the total take approved in incidental take permits reaches the total take analyzed under this Plan for California tiger salamander, no additional Permit Application Packages will be approved by the Service.

The total amount of take approved by the Service in incidental take permits and the amount of take remaining within the Plan will be posted on the Service’s website, <https://www.fws.gov/ventura/endangered/habitatconservation/CultivationPlan.html>. The amount of take will be updated following each approval of an incidental take permit or as end of year reports are submitted.

Permit Application Submission

Permit Application Packages, all associated information described above (and in the application instructions), and the processing fee must be submitted to the Service’s Ventura Fish and Wildlife Office. Applicants should also submit an electronic copy of the application by email to sbc-cultivationgcp@fws.gov with the subject heading “Plan Application – <Your Company Name>.”

Under section 10(c) of the Act and Federal regulations (50 CFR 17.22 and 17.32 or 50 CFR 222.302 and 222.303), the Services must publish a notice of receipt for each section 10 permit application received in the Federal Register. The information received by the Services as part of an application package must be made available for public review (section 10(c) of the Act). Notification to the public regarding permit issuance is through the publication of a notice in the Federal Register. A section 10(a)(1)(B) incidental take permit may be issued upon a determination by the Service that all requirements for permit issuance have been met. Statutory criteria for issuance of the permit specify that: (1) the taking will be incidental; (2) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking; (3) the applicant will ensure that adequate funding for the conservation plan and procedures to deal with unforeseen circumstances will be provided; (4) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and (5) the Service has received assurances, as may be required, that the conservation plan will be implemented. The Service also prepares an Intra-Service section 7 biological opinion and a Set of Findings, the latter which evaluates the section 10(a)(1)(B) permit application in the context of permit issuance criteria. Issuance of an incidental take permit is a federal action that requires section 7 and NEPA compliance.

Permit Implementation

If a Permit is issued, the Permittee will be responsible for:

- 1) Fully implementing the actions described in this Plan;
- 2) Complying with all terms and conditions of the Permit;
- 3) Ensuring that minimization measures are implemented;
- 4) Providing proof of mitigation to the Service prior to onset of any activities that have the potential to result in take of California tiger salamander. Permittees should submit the proof of mitigation along with any supporting documentation to sbc-cultivationgcp@fws.gov with the subject heading “Plan Mitigation Fulfillment – <Your Company Name>”;
- 5) Monitoring and tracking their total take of California tiger salamander and total impacts to California tiger salamander habitat; and

- 6) Reporting take of California tiger salamander, total impacts to California tiger salamander habitat, and mitigation on an annual basis.

Impact, Mitigation, and Post-Construction Restoration Tracking

Following Service's issuance of a Permit, Covered Activities included in the Individual Project Package may begin. During and after implementation of Covered Activities, Permittees must:

- 1) Track Take of California Tiger Salamander

After project completion, the Permittee will document the actual amount of take of California tiger salamander and impacts to California tiger salamander habitat. This will be necessary for two reasons: 1) impacts to California tiger salamanders must be monitored and tracked to ensure that incidental take identified in the Service's biological opinion for the Plan has not been exceeded and 2) the Permittee must ensure that impacts to habitat did not exceed project specific estimates identified in the Individual Permit Package.

- 2) Ensure Minimization and Mitigation

The Act requires that the conservation program meeting the requirements for Permit issuance must include measures to minimize and mitigate impacts to the California tiger salamander to the maximum extent practicable. All minimization and mitigation measures, as identified in Section 5 of this document, should be tracked by the Permittee and reported. Adequate mitigation must be in place before the corresponding take occurs.

- 3) Tracking Restoration of Temporarily Impacted Areas and Mitigation

An impact may be considered temporary if: (1) the impacted area within California tiger salamander habitat will be restored to an area suitable for use within 5 years of the initial impact. Applicants will determine whether Covered Activities will cause temporary or permanent impacts and mitigate appropriately for those impacts (see Temporary and Permanent Impacts sections in Section 5). Following initial temporary impacts, the Permittee may conduct additional Covered Activities within the impacted area without additional mitigation if the area has not yet been Service-validated as restored to suitable California tiger salamander (not to exceed 5 years from impact start date). For example, a Permittee determines that construction of a temporary road results in temporary impacts to California tiger salamander habitat and mitigates appropriately prior to impacts, additional Covered Activities (i.e., maintenance or repair) occurring within the original construction area would not need additional mitigation if the area has not yet been restored. If subsequent impacts or failure of restoration techniques will prevent the area from being restored to a condition suitable for California tiger salamander use within 5 years of the impact start date, then additional mitigation would be required before the 5th anniversary of the impact start date. Additional mitigation would be required because any temporary impact lasting more than 5 years is considered a permanent impact as

discussed under Section 5 above. All additional mitigation provided for these impacts must be reported in the annual report.

Reporting

An annual report of Covered Activities, as well as management activities undertaken under the terms of this Plan, will be prepared by Permittees and submitted electronically to sbc-losalamosgcp@fws.gov. E-mail subject heading should read “Annual Report – Permit TExXXXXXX – Individual Project Package #XXX” with the applicable year in four-digit format, Permit number (found in Box 3 of Permit) and Individual Project Package number (found in Permit Application Package approval e-mail from Service) for the project. A copy of the cover letter (or e-mail) must be submitted to the Ventura Fish and Wildlife Office with the same subject line as the e-mail. Annual reports will be submitted by March 31 of each year that the Permit is in effect (i.e., the Permittee is working under an active Permit). The report will summarize information on the monitoring and management activities for all issued Permits, including:

- Permit number;
- Description of activity conducted within California tiger salamander habitat;
- Location (County, Township/Range/Section) of impacts;
- Map identifying the location of impacts;
- Habitat type impacted;
- Annual area (in acres) disturbed within California tiger salamander habitat occurring within each reporting year;
- Type of impact (temporary/permanent) to California tiger salamander habitat occurring within each reporting year;
- Duration of all impacts in California tiger salamander habitat;
- Minimization measures implemented within California tiger salamander habitat;
- Amount and type (permittee-responsible or purchase of conservation bank credits) of mitigation required based on impacts;
- Date of mitigation fulfillment (credit purchase or approval of conservation easement);
- Total acres of mitigation provided for impacts but not yet applied to impacts;
- Summary of the above information by year and cumulative for entire duration of the Permit; and
- All Permits that include temporary impacts must also include:
 - Impact start date (used to determine 5-year restoration period for temporary impacts);
 - Map identifying the areas with temporary impacts and restoration status;
 - Number of acres with temporary impacts;
 - Number of acres with restoration still in progress;
 - Number of acres considered by Permittee to be restored;
 - Techniques implemented to restore areas with temporary impacts to California tiger salamander habitat; and
 - All color digital images previously taken for annual reports. Additionally, Permittees must submit photographs taken annually within two weeks of the date the pre-impact photographs were taken during the calendar year of the restoration

report (for example, if pre-impact photographs were taken on July 15, 2015, the restoration report must include photographs taken within two weeks of July 15 of the given calendar year). Permittees will submit color digital images, the date the photograph was taken, and the location of established photograph points (latitude and longitude recorded in NAD83). Photographs must be taken in the four cardinal directions (North, South, East, and West) at the established photograph points. The established photograph points used for reporting must be the same photograph points identified during the Permit Application Package approval process and annual reports.

Restoration reports must be submitted electronically to sbc-losalamosgcp@fws.gov. E-mail subject heading should read “Restoration Report – Permit TEXXXXXXX” with the applicable Permit number (found in Box 3 of Permit) for the project. This report, including the amount and type of information required, is subject to change as data organization or data needs are determined by the Service.

Permittees are not required to submit an annual report if their project activities conclude before the permit duration expires. If no impacts to California tiger salamander or its habitat occur during a given year of the Permit’s duration, Permittees may send an e-mail to the Ventura Fish and Wildlife Office at (sbc-losalamosgcp@fws.gov) stating that no impacts occurred during that calendar year. E-mail subject heading should read “Annual Report – Permit TEXXXXXXX – No Impacts.”

Permit Amendments

Clarifications and Minor Administrative Amendments

Provisions of the Plan or Permits may need to be clarified to address issues with respect to administration of the process or the precise meaning and intent of the language contained within those documents. Permittees may also wish to have provisions clarified and may request that the Service provide such clarifications. Clarifications do not change the substantive provisions of any of the documents in any way but merely clarify and make more precise the provisions as they exist.

In addition, Minor Administrative Amendments to the Plan may be necessary that do not make substantive changes to any of the provisions, but which may be necessary or convenient, over time, to more fully represent the overall intent of the Permittee and the Service. Any request for clarification or any proposed Minor Administrative Amendment will be reviewed by the Service. If the Service approves the amendment or clarification, it will be processed and the Service will provide a response. Clarifications may be approved locally by the Field Supervisor of the Ventura Fish and Wildlife Office. Minor Administrative Amendments to the Plan may be approved by the Field Supervisor of the Ventura Fish and Wildlife Office depending on the nature of the amendment. Clarifications and Minor Administrative Amendments to the Plan will be memorialized by a letter of agreement that will be archived at the Ventura Fish and Wildlife Office and will be posted on the Plan website, <https://www.fws.gov/ventura/endangered/habitatconservation/LosAlamosConservationPlan.html>.

The Plan may be amended without amending issued Permits when the amendments are of a minor or technical nature such that the net impacts on California tiger salamander and levels of take resulting from the amendment are not increased over those described in the original Plan and the Service's decision documents. Examples of minor amendments to the Plan that would not require a Permit amendment include, but are not limited to: (a) minor revisions to monitoring or reporting procedures; (b) minor revisions in accounting procedures; and (c) minor modifications to Covered Activities in response to evolving technologies (provided that impacts associated with such activities will not exceed the level of take authorized under the Permit and are compliant with other local and state laws and regulations). To propose a minor amendment to the Plan without amending their Permit, applicants must submit to the Service, in writing, a description of: (a) the proposed amendment; (b) an explanation of why the amendment is necessary or desirable; and (c) an explanation of why the applicant believes the effects of the proposal are not different from those described in the original Plan. If the Service concurs with the proposed amendment, then it will authorize the Plan amendment in writing, and the amendment will be considered effective upon the date of the written authorization from the Service. Other circumstances which may require minor amendments include (but are not limited to) requests to update Permits with changes to Permittee name (such as after merger or acquisition) or mailing address.

Major Amendments

Major Amendments are modifications that result in impacts not previously analyzed, such as (but not limited to), new listing as threatened or endangered of species not addressed by this Plan that may be affected by Covered Activities, expansion of the Plan Area, or the addition of Covered Activities. Substantive changes will be processed as an amendment in accordance with the provisions of the Act and regulations at 50 CFR Parts 13 and 17 and will be subject to appropriate environmental review under the provisions of NEPA. Major Amendments to the Plan may be implemented by the Service following publication of the approved, amended Plan. Following completion of a Major Amendment to the Plan, all future Permits would contain the modifications contained within the Major Amendment. Previously-existing Permits will not be required to incorporate any changes caused by a Major Amendment, unless a Permittee voluntarily chooses to modify their Permit.

Major Amendments to individual Permits would be required for any modification of the Covered Activities that is expected to cause take of California tiger salamander not analyzed or authorized in the original Permit or if the authorized amount of take is insufficient for the Permittee's need. These amendments must be completed prior to the activities causing take. If Permittees need to expand project areas, the Service recommends that Permittees apply for an additional Permit under the Plan, rather than requesting a Major Amendment to an existing Permit.

Permit Renewal

Section 10(a)(1)(B) permits may be renewed without the issuance of a new permit, provided that the permit is renewable, and that biological circumstances and other pertinent factors affecting the California tiger salamander are not significantly different than those described in the original

conservation plan. To renew a permit issued under this plan, the permittee will submit to the Service, in writing: (1) a request to renew the permit with reference to the original permit number; (2) certification that all statements and information provided in the original Individual Permit Package, together with any approved amendments, are still true and correct, and inclusion of a list of changes; (3) a description of any take that has occurred under the existing permit; and (4) a description of any portions of the project still to be completed, if applicable, or what activities under the original permit the renewal is intended to cover.

If the Service concurs with the information provided in the request, it will renew the permit consistent with permit renewal procedures required by Federal regulation (50 CFR 13.22). If the applicant files a renewal request and the request is on file with the issuing Service office at least 30 days prior to the permit expiration date, the permit will remain valid while the renewal is being processed. However, the applicant may not take listed species beyond the quantity authorized by the original permit. If the applicant fails to file a renewal request within 30 days prior to the permit expiration date, the permit will become invalid upon expiration. The applicant must have complied with all annual reporting requirements to qualify for a permit renewal.

Permit Transfer

In the event of a sale or transfer of ownership of a company, property or project during the life of the permit, the following will be submitted to the Service by the new owner(s): (1) a new permit application; (2) permit fee; and (3) written documentation providing assurances pursuant to 50 CFR 13.25 (b)(2) that the new owner will provide funding adequate to fully implement the actions described in their Individual Permit Package and the relevant terms and conditions of the permit, including any outstanding minimization and mitigation. The new owner(s) will commit to all requirements regarding the take authorization and mitigation obligations of this Plan unless otherwise specified in writing and agreed to in advance by the Service.

Such Other Measures that the Service May Require

If dead, injured, or sick endangered or threatened species, migratory birds, or eagles are discovered, Permittees are required to contact the Ventura Fish and Wildlife Office at (805) 644-1766 for care and disposition instructions within 72 hours of discovery. Extreme care must be taken in handling sick or injured individuals to ensure effective and proper treatment. Care must also be taken in handling dead specimens to preserve biological materials in the best possible state for analysis of cause of death. In conjunction with the care of sick or injured endangered or threatened species or preservation of biological materials from any dead specimens, Permittees and their contractors/subcontractors have the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

If during the tenure of Permits issued through participation in the Plan, the project design and/or the extent of habitat impacts is altered, such that there may be an increase in the anticipated take of California tiger salamander, Permittees are required to contact the Service and obtain a new Permit or Individual Project Package approval and/or amendment of their Permit before commencing any construction or other activities that might result in take beyond that described in their Permit.

The incidental take authorization granted by Permits issued through participation in the Plan will be subject to full and complete compliance with, and implementation of, the Plan and all specific conditions contained in resulting Permits. Permit terms and conditions will supersede and take precedence over any inconsistent provisions in the Plan or other Permit documents.

Acceptance of Permits serves as evidence that Permittees understand and agree to abide by the terms of the Permit and all applicable Sections of 50 CFR Parts 13 and 17.

**Section 8
References**

- Andrews, K. M., J. W. Gibbons, and D. M. Jochimsen. 2008. Ecological effects of roads on amphibians and reptiles: A literature review, In *Urban Herpetology*, J. C. Mitchell, R. E. Jung Brown, and B. Bartholomew, Eds. Society for the Study of Amphibians and Reptiles,
- Barnett, T.P., D.W. Pierce, H.G. Hidalgo, C. Bonfils, B.D. Santer, T. Das, G. Bala, A.W. Wood, T. Nozawa, A.A. Mirin, D.R. Cayan, and M.D. Dettinger. 2008. Human-induced changes in the hydrology of the western United States. *Science* 319:1080-1083.
- Barry, S.J. and H.B. Shaffer. 1994. The Status of the California Tiger Salamander (*Ambystoma californiense*) at Lagunita: A 50-year update. *Journal of Herpetology* 28(2): 159-164.
- Beebee, T.J.C. 1995. Amphibian breeding and climate. *Nature* 374:219-220.
- Blaustein, A.R., Kiesecker, J.M., Chivers, D.P., D.G. Hokit, A. Marco, L.K. Belden, and A. Hatch. 1998. Effects of ultraviolet radiation on amphibians: field experiments. *American Zoologist* 38:799-812.
- Cayan, D.R., E.P. Maurer, M.D. Dettinger, M. Tyree, and K. Hayhoe. 2008. Climate change scenarios for the California region. *Climatic Change* 87 (Supplement 1):S21-S42.
- Cayan, D., M. Dettinger, I. Stewart, and N. Knowles. 2005. Recent changes towards earlier springs: early signs of climate warming in western North America? U.S. Geological Survey, Scripps Institution of Oceanography, La Jolla, California.
- Cook, D.G, P.C. Trenham, and P.T. Northen. 2006. Demography and breeding phenology of the California tiger salamander (*Ambystoma californiense*) in an urban landscape. *Northwestern Naturalist* 87(3):215-224.
- Corn, P.S. 2005. Climate change and amphibians. *Animal Biodiversity and Conservation* 28.1:59-67.
- County of Santa Barbara. 2020. Average Annual Rainfall in Santa Barbara County. <http://www.countyofsb.org/pwd/monthlyrain.sbc>. Accessed February 2020.
- Ferren, W. and B. Hecht. 2003. Hydrology and physiography of California tiger salamander habitats in Santa Barbara County, California. Submitted to the Ventura Fish and Wildlife Office, Ventura, California.
- Field, C.B., G.C. Daily, F.W. Davis, S. Gaines, P.A. Matson, J. Melack, and N.L. Miller. 1999. *Confronting climate change in California. Ecological impacts on the Golden State. A report of the Union of Concerned Scientists, Cambridge, Massachusetts, and the Ecological Society of America, Washington, DC.*

- Fisher, R.N. and H.B. Shaffer. 1996. The decline of amphibians in California's great central valley. *Conservation Biology* 10:1387-1397.
- Gibbs, J.P., and A. R. Breisch. 2001. Climate warming and calling phenology of frogs near Ithaca, New York, 1900-1999. *Conservation Biology* 15:1175-1178.
- Hansen, R.W. and R.L. Tremper. 1993. Amphibians and reptiles of central California. California Natural History Guides. University of California Press, Berkeley. 11 pp.
- Holland, D.C., M.P. Hayes, and E. McMillan. 1990. Late summer movement and mass mortality in the California tiger salamander (*Ambystoma californiense*). *The Southwestern Naturalist* 35(2): 217-220.
- Hunt, L.E. 1993. Origin, maintenance, and land use of aeolian sand dunes in the Santa Maria Basin. Prepared for The Nature Conservancy, San Luis Obispo, California. 72 pp.
- Intergovernmental Panel on Climate Change. 2014. Summary for policymakers. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1-32.
- Jackson, S.D. 1996. Underpass systems for amphibians. 4 pp. In G.L. Evink, P. Garrett, D. Zeigler and J. Berry (eds.) *Trends in Addressing Transportation Related Wildlife Mortality, proceedings of the transportation related wildlife mortality seminar*. State of Florida Department of Transportation, Tallahassee, FL. FL-ER-58-96.
- Kagarise-Sherman, C. and M.L. Morton. 1993. Population declines of Yosemite Toads in the Eastern Sierra Nevada of California. *Journal of Herpetology* 27(2):186-198.
- Launer, A. and C. Fee. 1996. Biological research on California tiger salamanders at Stanford University. Annual report August 8, 1996. 25 pp. + figures, tables and appendices.
- Leyse, K. and Lawler, S.P. 2000. Effect of mosquitofish (*Gambusia affinis*) on California tiger salamander (*Ambystoma californiense*) larvae in permanent ponds. *Mosquito Control Research*, annual report 2000.
- Loredo, I. and D. VanVuren. 1996. Reproductive ecology of a population of the California tiger salamander. *Copeia* 1996:895-901.
- Loredo, I., D. Van Vuren, and M.L. Morrison. 1996. Habitat use and migration behavior of the California tiger salamander. *Journal of Herpetology* 30:282-285.
- Orloff, S.G. 2007. Migratory movements of California tiger salamander in upland habitat – a five-year study, Pittsburg, California. Prepared for Bailey Estates LLC. 47 + pp.

- Orloff, S.G. 2011. Movement patterns and migration distances in an upland population of California tiger salamander (*Ambystoma californiense*). *Herpetological Conservation and Biology* 6:266-276.
- Petranka, J.W. 1998. Salamanders of the United States and Canada. Smithsonian Institution Press, Washington, D.C.
- Pounds, J.A., M.R. Bustamante, L.A. Coloma, J.A. Consuegra, M.P.L. Fogden, P.N. Foster, E. La Marca, K.L. Masters, A. Merino-Viteri, R. Puschendorf, S.R. Ron, G.A. Sanchez-Azofeifa, C.J. Still and B.E. Young. 2006. Widespread amphibian extinctions from epidemic disease driven by global warming. *Nature* 439:161-167.
- Pyke, C.R., and J. Marty. 2005. Cattle grazing mediates climate change impacts on ephemeral wetlands. *Conservation chytridiomycosis: an emerging disease of amphibians. Conservation Biology* 19:1619-1625.
- Reaser, J.K. and A. Blaustein. 2005. Repercussions of global change. Pp. 60-63. In: M. Lannoo, editor. *Amphibian declines: The conservation status of United States species*. University of California Press, Berkeley, California, USA.
- Riley, S.P.D., H.B. Shaffer, S.R. Voss, and B.M. Fitzpatrick. 2003. Hybridization between a rare, native tiger salamander (*Ambystoma californiense*) and its introduced congener. *Ecological Applications* 13:1263-1275.
- Ryan, S.E., K.A. Dwire, M.K. Dixon. 2010. Impacts of wildlife on runoff and sediment loads at Little Granite Creek, western Wyoming. *Geomorphology* 129:113-130.
- Searcy, C.A., and H.B. Shaffer. 2008. Calculating biologically accurate mitigation credits: insights from the California tiger salamander. *Conservation Biology* 22:997-1005.
- Searcy, C.A. and H.B. Shaffer. 2011. Determining the migration distance of a vagile vernal pool specialist: How much land is required for conservation of California tiger salamanders? Pages 73-87 in D. G. Alexander and R. A. Scblising (Editors), *Research and Recovery in Vernal Pool Landscapes. Studies from the Herbarium, Number 16*. California State University, Chico, CA.
- Searcy, C.A., E. Gabbai-Saldate, and H.B. Shaffer. 2013. Microhabitat use and migration distance of an endangered grassland amphibian. *Biological Conservation* 158:80-87
- Semlitsch, R.D. 2008. Differentiating Migration and Dispersal Processes for Pond-Breeding Amphibians. *Journal of Wildlife Management* 72:260-267.
- Semonsen, V. 1998. California tiger salamander; survey technique. *Natural history notes. Herpetological Review* 29.
- Shaffer, H.B., R.N. Fisher, and S.E. Stanley. 1993. Status report: the California tiger salamander (*Ambystoma californiense*). Final report for the California Department of Fish and Game. 36 pp. plus figures and tables. Loreda et al. 1996

- Storer, T.I. 1925. A synopsis of the Amphibia of California. University of California Publications in Zoology 27.
- Terhivuo, J. 1988. Phenology of spawning for the common frog (*Rana temporaria* L.) in Finland from 1846 to 1986. *Annales Zoologici Fennici* 25: 165-175.
- Toffelmier, E and Shaffer, H.B. 2017. Metapopulation dynamics of the critically endangered Santa Barbara Distinct Population Segment of the California tiger salamander, *Ambystoma californiense*. Amphibian Population Task Force Meeting, Santa Barbara, 2017. Trenham, P.C. 2001. Terrestrial habitat use by adult California tiger salamanders. *Journal of Herpetology* 35:343-346.
- Trenham, P.C. 1998. Demography, migration, and metapopulation structure of pond breeding salamanders. Ph.D. dissertation. University of California, Davis, California.
- Trenham, P.C. 2001. Terrestrial habitat use by adult California tiger salamanders. *Journal of Herpetology* 35:343-346.
- Trenham, P.C. and H.B. Shaffer. 2005. Amphibian upland habitat use and its consequences for population viability. *Ecological Applications* 15:1158-1168.
- Trenham P.C., H.B. Shaffer, W.D. Koenig and M.R. Stromberg. 2000. Life history and demographic variation in the California tiger salamander. *Copeia* 2000:365-377.
- Trenham, P.C., W.D. Koenig, and H.B. Shaffer. 2001. Spatially autocorrelated demography and interpond dispersal in the California tiger salamander, *Ambystoma californiense*. *Ecology* 82:3519-3530.
- Trombulak, S.C. and C.A. Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. *Conservation Biology* 14(1):18-30.
- Twitty, V.C. 1941. Data on the life history of *Ambystoma tigrinum californiense*. *Copeia* 1:1-4.
- [Service] U.S. Fish and Wildlife Service. 2004. Endangered and threatened wildlife and plants; Designation of critical habitat for the California tiger salamander (*Ambystoma californiense*) in Santa Barbara County. *Federal Register* 69:68568.
- [Service] U.S. Fish and Wildlife Service. 2005. Designation of critical habitat for the California tiger salamander, Central Population; Final Rule. *Federal Register*, Vol. 70:49380-49458.
- [Service] U.S. Fish and Wildlife Service. 2009. California tiger salamander (*Ambystoma californiense*) Santa Barbara County Distinct Population Segment 5-year review: Summary and evaluation. U.S. Department of Interior, Ventura, California.
- [Service] U.S. Fish and Wildlife Service. 2016. Recovery plan for the Santa Barbara County Distinct Population Segment of the California tiger salamander (*Ambystoma californiense*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Ventura, California. vi + 87 pp.
- [Service] U.S. Fish and Wildlife Service. 2019. Map of Suitable Pond Features for the Santa Barbara County Distinct Population Segment of the California tiger salamander within Santa

Barbara County, California. U.S. Fish and Wildlife Service, Pacific Southwest Region, Ventura, California.

[Service] U.S. Fish and Wildlife Service. 2020. Conservation Strategy and Mitigation Guidance for the Santa Barbara County Distinct Population Segment of the California tiger salamander. U.S. Fish and Wildlife Service, Pacific Southwest Region, Ventura, California.

[Service] U.S. Fish and Wildlife Service and [Department] California Department of Fish and Wildlife. 2003. Interim guidance on site assessment and field surveys for determining presence or a negative finding of the California tiger salamander. Available at: http://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/cts_survey_protocol.pdf.

Wake, D.B. 2007. Climate change implicated in amphibian and lizard declines. *Proceedings of the National Academy of Sciences* 104 (20):8201-8202.

Wang, I.J., J.R. Johnson, B.B. Johnson, and H.B. Shaffer. 2011. Effective population size is strongly correlated with breeding pond size in the endangered California tiger salamander, *Ambystoma californiense*. *Conservation Genetics* 12:911-920.

Wang, I.J., W.K. Savage, and H.B. Shaffer. 2009. Landscape genetics and least-cost path analysis reveal unexpected dispersal routes in the California tiger salamander (*Ambystoma californiense*). *Molecular Ecology* 18:1365-1374.

Western Regional Climate Center. 2016. Historic Records, Santa Maria Public AP: 1947-2016, www.wrcc.dri.edu. Accessed December 2016.

Whitfield, S.M., K.E. Bell, T. Phillippi, M. Sasa, F. Bolaños, G. Chaves, J.M. Savage, and M.A. Donnelly. 2007. Amphibian and reptile declines over 35 years at La Selva, Costa Rica. *Proceedings of the National Academy of Sciences* 104 (20):8352-8356.

In Litteris Reference

Searcy, Christopher A. 2014. Electronic mail correspondence from Chris Searcy, U.C. Davis, to Cat Darst, USFWS, Ventura FWO, dated July 28, 2014.